

TEST REPORT

CERTIFICATE OF CONFORMITY

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

Report No.: RFCJWN-WTW-P26050089-1

FCC ID: 2AEUP-5QFYAB

Product: Security Hub

Brand: ring

Model No.: 5QFYAB

Received Date: 2026/5/20

Test Date: 2026/5/25 ~ 2026/6/25

Issued Date: 2026/7/17

Applicant: Ring LLC

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Issued By: Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch
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FCC Registration / 281270 / TW0032 for Test Location(1)

Designation Number: 788550 / TW0003 for Test Location(2)

Approved by:

Jeremy Lin

Jeremy Lin / Project Engineer

Date:

2026/7/17

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Prepared by : Annie Chang / Senior Specialist

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Release Control Record

Issue No.	Description	Date Issued
RFCJWN-WTW-P26050089-1	Original release.	2026/7/17

1 Certificate

Product: Security Hub

Brand: ring

Test Model: 5QFYAB

Sample Status: Engineering sample

Applicant: Ring LLC

Test Date: 2026/5/25 ~ 2026/6/25

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

Measurement ANSI C63.10-2020

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 -5.80 dB at 0.53709 MHz
15.205 / 15.209 / 15.247(d)	Unwanted Emissions below 1 GHz	Pass	Minimum passing margin is -6.6 dB at 36.79 MHz
15.205 / 15.209 / 15.247(d)	Unwanted Emissions above 1 GHz	Pass	Minimum passing margin is -3.0 dB at 2483.50 MHz and 4874.00 MHz
15.203	Antenna Requirement	Pass	Antenna connector is I-PEX MHF I 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	-	1.371 dB
Power Spectral Density	-	1.017 dB
6 dB Bandwidth	-	206.5 Hz
Conducted Out of Band Emissions	9 kHz ~ 40 GHz	2.79 dB
AC Power Conducted Emissions	9 kHz ~ 30 MHz	2.88 dB
Unwanted Emissions below 1 GHz	9 kHz ~ 30 MHz	3 dB
	30 MHz ~ 1 GHz	2.93 dB
Unwanted Emissions above 1 GHz	1 GHz ~ 18 GHz	1.76 dB
	18 GHz ~ 40 GHz	1.77 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	Security Hub
Brand	ring
Test Model	5QFYAB
Status of EUT	Engineering sample
Power Supply Rating	Refer to note as below
Modulation Type	CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM 1024QAM for OFDMA in 11ax mode
Modulation Technology	DSSS, OFDM, OFDMA
Transfer Rate	Up to 573.5 Mbps
Operating Frequency	2.412 GHz ~ 2.462 GHz
Number of Channel	802.11b, 802.11g, 802.11n (HT20), 802.11ax (HE20):11 802.11n (HT40), 802.11ax (HE40):7
Partial RU Mode	Single RU
Channel Puncturing	Not support
Output Power	237.194 mW (23.75 dBm)

Note:

1. The EUT uses following battery.

Item	Brand	Model No.	Specification
Rechargeable Lithium-ion Battery	ring	5F53E9	3.6Vdc, 5800mAh, 20.88Wh Micro USB Input: 5Vdc, 1A

2. The EUT uses following accessories.

Item	Brand	Model	Specification
AC Adapter	ring	7PNXAB (US Plug), 7PNXA2 (EU Plug), 7PNXA3 (UK Plug)	AC I/P: 100-240V, 0.45A, 50/60Hz DC O/P: 5V, 3A Shielded USB-C Cable (1.5m)

The above adapters are identical with each other except for their plug type difference.

3. There are WLAN 2.4 GHz, WWAN (LTE), Bluetooth and LoRa technology used for the EUT.

4. Simultaneously transmission combination.

Combination	Technology	
1	LoRa	WWAN (LTE)
2	Bluetooth	WWAN (LTE)
3	WLAN 2.4 GHz	WWAN (LTE)

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

5. The EUT support OFDMA and Partial RU mode, therefore partial RU combination were investigated and the worst case scenario was identified.

6. 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.

Item	Antenna Gain (dBi)	Frequency range (MHz)	Antenna Type	Connector Type
LTE 1	4.42	700~2690	Stamping IFA	I-PEX MHF I
LTE 2	4.32			
WiFi 1	2.35	2400~2500	PCB Dipole	I-PEX MHF I
WiFi 2	2.63			
LoRa+BLE(Tx/Rx)	0.8	863~890	PCB Dipole	I-PEX MHF I
	0.74	915~928		
	3.83	2400~2500		

* 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	Beamforming Mode	TX & RX Configuration	
802.11b	Not Support	2TX	2RX
802.11g	Not Support	2TX	2RX
802.11n (HT20)	Support	2TX	2RX
802.11n (HT40)	Support	2TX	2RX
802.11ax (HE20)	Support	2TX	2RX
802.11ax (HE40)	Support	2TX	2RX
802.11ax (RU52/106)	Support	2TX	2RX

Note:

1. All of modulation mode support beamforming function except 802.11b and 802.11g 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 802.11ax mode for 20 MHz (40 MHz). Therefore the investigated worst case is the representative mode in test report.

3.3 Channel List

11 channels are provided for 802.11b, 802.11g, 802.11n (HT20), 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), 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:	Pretest 3 axis, select worst case.
Worst Case:	X-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	RU/MRU Index
RF Output Power	802.11b	CDD	1, 6, 11	BPSK	6Mb/s	NA
	802.11g	CDD	1, 6, 11	BPSK	MCS0	NA
	802.11ax (HE20)	CDD / Beamforming	1, 6, 11	BPSK	MCS0	NA
	802.11ax (HE40)	CDD / Beamforming	3, 6, 9	BPSK	MCS0	NA
	802.11ax (HE20) 52-tone RU	CDD / Beamforming	1, 6, 11	BPSK	MCS0	37, 37, 40
	802.11ax (HE20) 106-tone RU	CDD / Beamforming	1, 6, 11	BPSK	MCS0	53, 53, 54
Power Spectral Density	802.11b	CDD	1, 6, 11	BPSK	6Mb/s	NA
	802.11g	CDD	1, 6, 11	BPSK	MCS0	NA
	802.11ax (HE20)	CDD	1, 6, 11	BPSK	MCS0	NA
	802.11ax (HE40)	CDD	3, 6, 9	BPSK	MCS0	NA
	802.11ax (HE20) 52-tone RU	CDD	1, 6, 11	BPSK	MCS0	37, 37, 40
	802.11ax (HE20) 106-tone RU	CDD	1, 6, 11	BPSK	MCS0	53, 53, 54
6 dB Bandwidth / Conducted Out of Band Emissions	802.11b	CDD	1, 6, 11	BPSK	6Mb/s	NA
	802.11g	CDD	1, 6, 11	BPSK	MCS0	NA
	802.11ax (HE20)	CDD	1, 6, 11	BPSK	MCS0	NA
	802.11ax (HE40)	CDD	3, 6, 9	BPSK	MCS0	NA
AC Power Conducted Emissions	802.11ax (HE20)	CDD	6	BPSK	MCS0	NA
Unwanted Emissions below 1 GHz	802.11ax (HE20)	CDD	6	BPSK	MCS0	NA
Unwanted Emissions above 1 GHz	802.11b	CDD	1, 6, 11	BPSK	6Mb/s	NA
	802.11g	CDD	1, 6, 11	BPSK	MCS0	NA
	802.11ax (HE20)	CDD	1, 6, 11	BPSK	MCS0	NA
	802.11ax (HE40)	CDD	3, 6, 9	BPSK	MCS0	NA

3.5 Duty Cycle of Test Signal

802.11b: Duty cycle = 7.04 ms / 7.4 ms x 100% = 95.1%, duty factor = $10 \cdot \log(1/\text{Duty cycle}) = 0.22$ dB

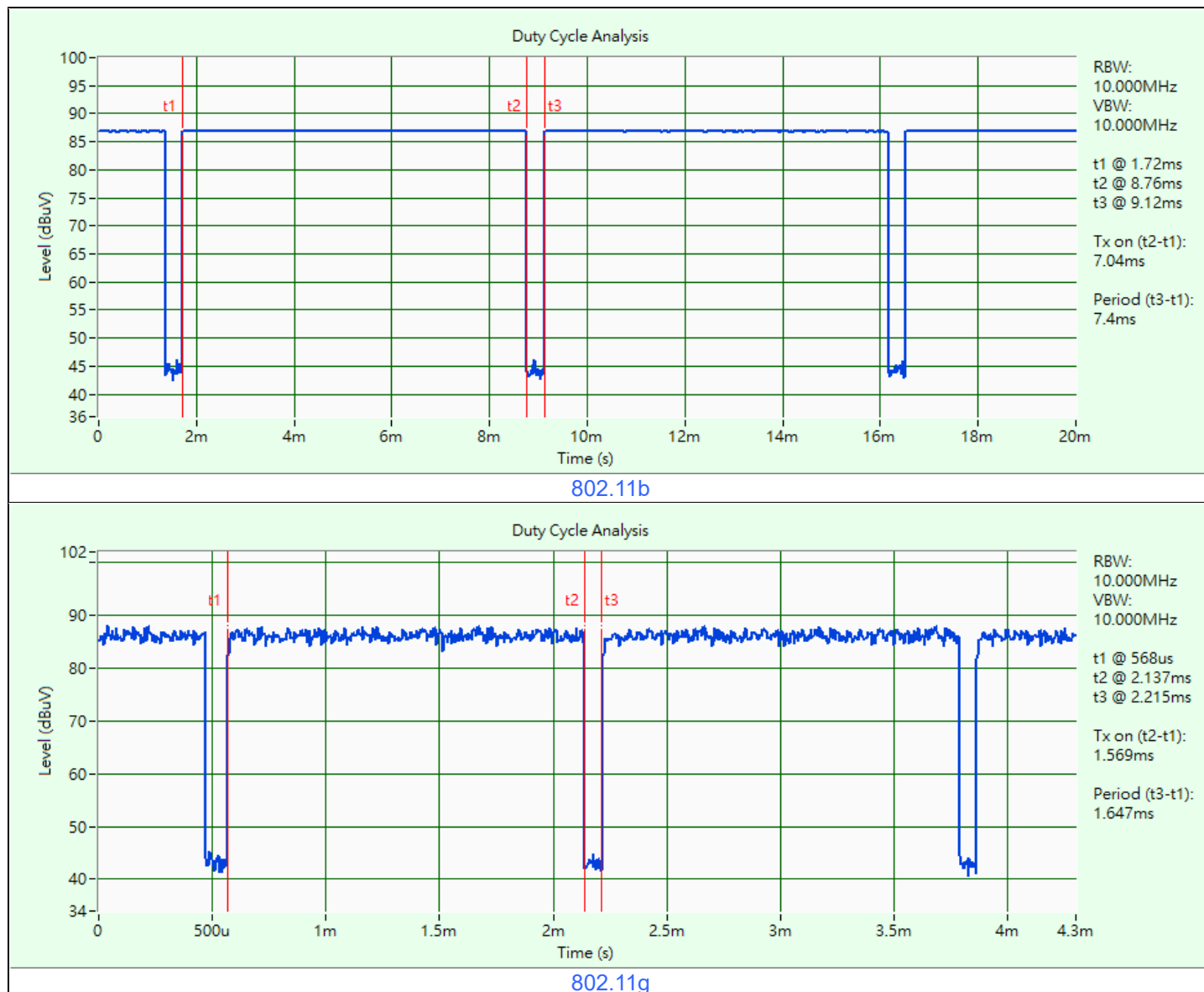
802.11g: Duty cycle = 1.569 ms / 1.647 ms x 100% = 95.3%, duty factor = $10 \cdot \log(1/\text{Duty cycle}) = 0.21$ dB

802.11ax (HE20): Duty cycle = 5.26 ms / 5.6 ms x 100% = 93.9%, duty factor = $10 \cdot \log(1/\text{Duty cycle}) = 0.27$ dB

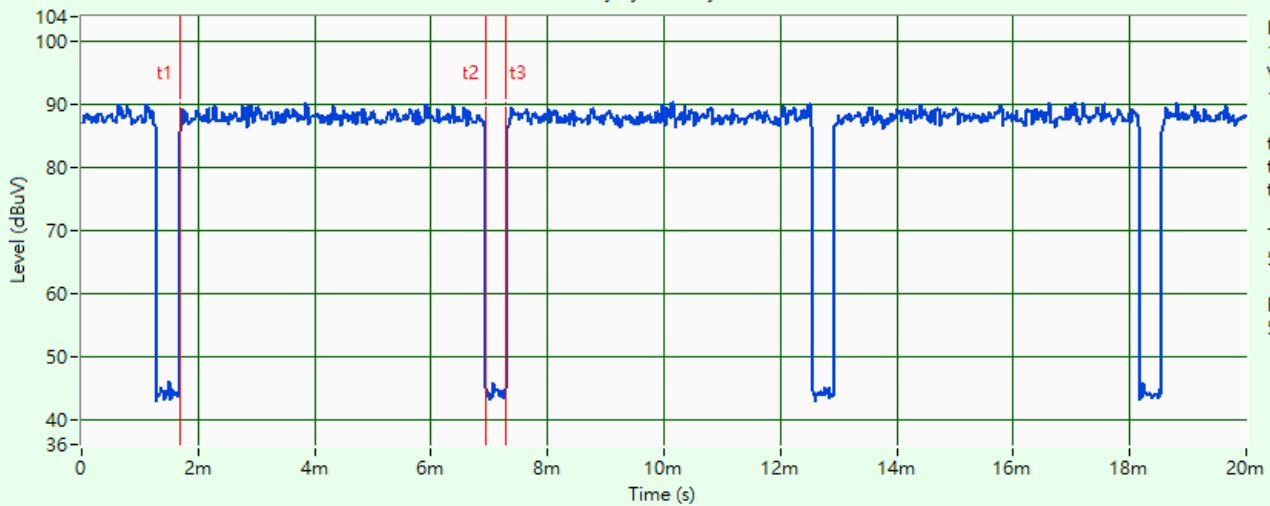
802.11ax (HE40): Duty cycle = 5.26 ms / 5.62 ms x 100% = 93.6%, duty factor = $10 \cdot \log(1/\text{Duty cycle}) = 0.29$ dB

802.11ax (RU52): Duty cycle = 5.375 ms / 5.647 ms x 100% = 95.2%, duty factor = $10 \cdot \log(1/\text{Duty cycle}) = 0.21$ dB

802.11ax (RU106): Duty cycle = 5.375 ms / 6.138 ms x 100% = 87.6%, duty factor = $10 \cdot \log(1/\text{Duty cycle}) = 0.58$ dB

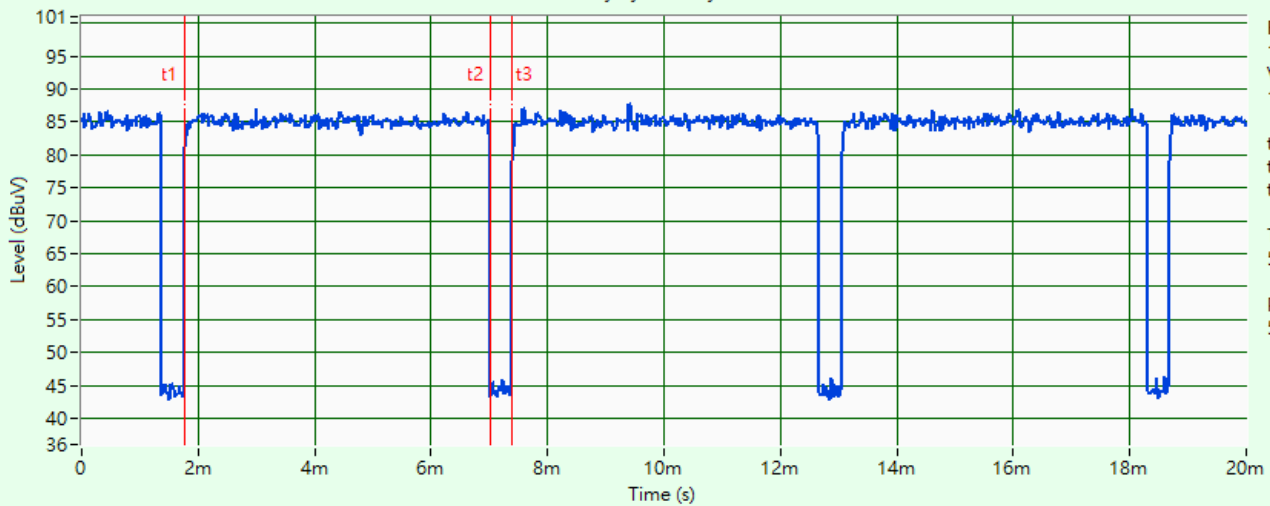


Duty Cycle Analysis

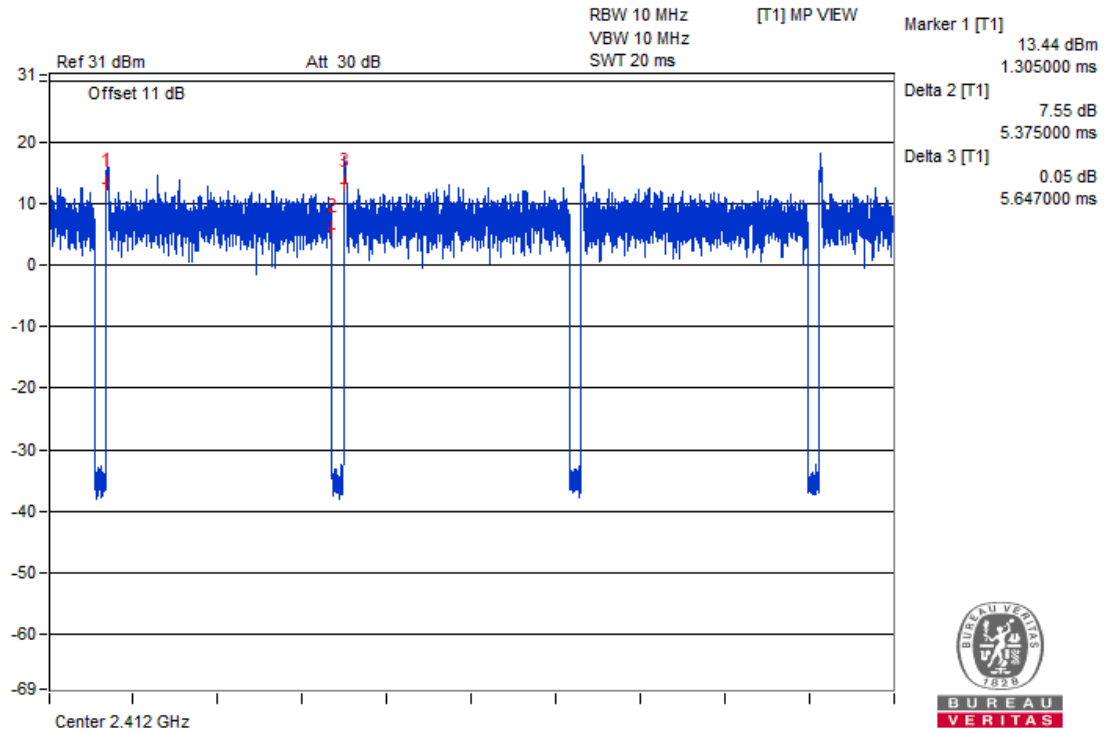


802.11ax (HE20)

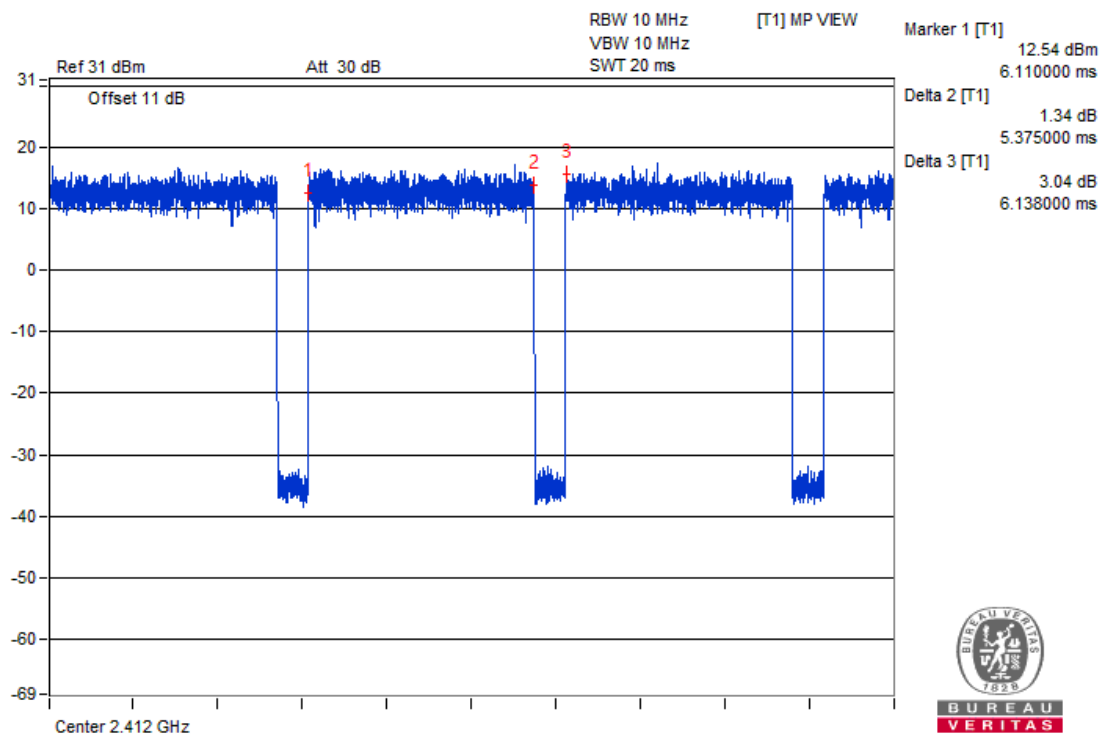
Duty Cycle Analysis



802.11ax (HE40)



802.11ax (RU52)

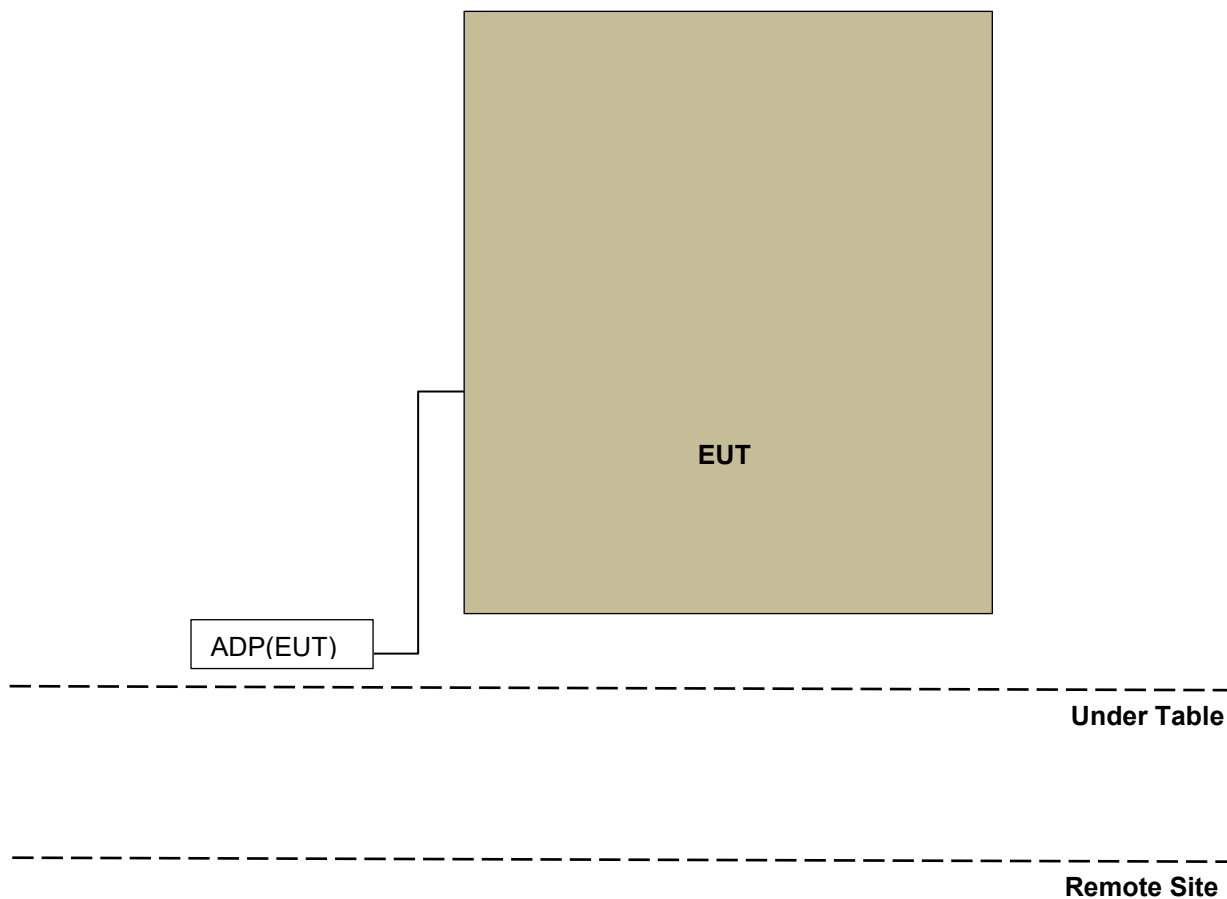


802.11ax (RU106)

3.6 Test Program Used and Operation Descriptions

Controlling software QRCT_Ver_4.0.210.0 has been activated to set the EUT under transmission condition continuously at specific channel frequency.

3.7 Connection Diagram of EUT and Peripheral Devices



3.8 Configuration of Peripheral Devices and Cable Connections

ID	Product	Brand	Model No.	Serial No.	FCC ID	Remarks
EUT	Adapter	ring	7PNXAB	N/A	N/A	Supplied by applicant

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
Fixed Attenuator Woken	00800A1K01A-10	00800A1K01A-10-01	2026/5/21	2027/5/20
Peak Power Analyzer Keysight	8990B	MY51000485	2026/1/23	2027/1/22
USB Power Sensor Anritsu	MA24408A	12994	2025/12/5	2026/12/4
Wideband Power Sensor Keysight	N1923A	MY58020002	2026/1/26	2027/1/25
		MY58140009	2026/1/26	2027/1/25

Notes:

1. The test was performed in HY - Oven room(Hwaya).
2. Tested Date: 2026/6/4 ~ 2026/6/25

4.2 Power Spectral Density

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
Fixed Attenuator Woken	00800A1K01A-10	00800A1K01A-10-01	2026/5/21	2027/5/20
Software BV	ADT_RF Test Software V7.6.5.4	N/A	N/A	N/A
Spectrum Analyzer R&S	FSU43	101261	2026/5/4	2027/5/3

Notes:

1. The test was performed in HY - Oven room(Hwaya).
2. Tested Date: 2026/6/4 ~ 2026/6/9

4.3 6 dB Bandwidth

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
Fixed Attenuator Woken	00800A1K01A-10	00800A1K01A-10-01	2026/5/21	2027/5/20
Software BV	ADT_RF Test Software V7.6.5.4	N/A	N/A	N/A
Spectrum Analyzer R&S	FSU43	101261	2026/5/4	2027/5/3

Notes:

1. The test was performed in HY - Oven room(Hwaya).
2. Tested Date: 2026/6/4

4.4 Conducted Out of Band Emissions

Refer to section 4.3 to get the tested date and information of the instruments.

4.5 AC Power Conducted Emissions

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
50 ohm terminal resistance	E1-011279	04	2025/12/4	2026/12/3
	E1-011280	05	2025/12/4	2026/12/3
	E1-011311	09	2025/12/4	2026/12/3
DC LISN Schwarzbeck	NNBM 8126G	8126G-069	2025/11/3	2026/11/2
Diode Pulse Limiter Schwarzbeck	VTSD 9561 F-N	01445	2026/4/18	2027/4/17
EMI Test Receiver R&S	ESCI	100613	2025/11/27	2026/11/26
Extension Power Line EMCI	EMCI-EXP-EU-US	023	2026/3/6	2027/3/5
LISN R&S	ENV216	101826	2026/3/6	2027/3/5
	ESH3-Z5	100311	2025/8/28	2026/8/27
RF Coaxial Cable Woken	5D-FB	Cable-cond1-01	2026/1/3	2027/1/2
Software BVADT	BVADT_Conf_ V7.4.1.0	N/A	N/A	N/A
V-LISN Schwarzbeck	NNBL 8226-2	8226-142	2025/8/27	2026/8/26

Notes:

1. The test was performed in HY - Conduction 1.
2. Tested Date: 2026/5/30

4.6 Unwanted Emissions below 1 GHz

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
Antenna Tower Max-Full	MFA-515BSN	N/A	N/A	N/A
Bi_Log Antenna Schwarzbeck	VULB 9168	9168-1214	2025/9/18	2026/9/17
Loop Antenna TESEQ	HLA 6121	45745	2025/9/1	2026/8/31
MXE EMI Receiver Keysight	N9038B	MY60180019	2026/1/14	2027/1/13
Preamplifier EMCI	EMC330N	980798	2026/1/13	2027/1/12
RF Coaxial Cable EMCI	EMCCFD400-NM-NM-500	201248	2026/1/13	2027/1/12
	EMCCFD400-NM-NM-3000	201249	2026/1/13	2027/1/12
	EMCCFD400-NM-NM-9000	201251(with PAD)	2026/1/13	2027/1/12
Signal & Spectrum Analyzer R&S	FSV3044	101504	2025/6/18	2026/6/17
Software BV ADT	ADT_Radiated_ V7.7.1.1.1	N/A	N/A	N/A
Turn Table Max-Full	MFT-201SS	N/A	N/A	N/A
Turn Table Controller Max-Full	MF-7802BS	MF780208676	N/A	N/A

Notes:

1. The test was performed in WM - 966 chamber 9(Wenming).
2. Tested Date: 2026/5/29

4.7 Unwanted Emissions above 1 GHz

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
Antenna Tower Max-Full	MFA-515BSN	N/A	N/A	N/A
Horn Antenna RFSPIN	DRH18-E	210104A18E	2025/11/9	2026/11/8
Horn Antenna Schwarzbeck	BBHA 9170	9170-1049	2025/11/9	2026/11/8
MXE EMI Receiver Keysight	N9038B	MY60180019	2026/1/14	2027/1/13
Preamplifier Agilent	83017A	MY39501357	2025/6/11	2026/6/10
Preamplifier EMCI	EMC184045SE	980788	2026/1/13	2027/1/12
RF Coaxial Cable EMCI	EMC101G-KM-KM-2000	201254	2026/1/13	2027/1/12
		201255	2026/1/13	2027/1/12
	EMC101G-KM-KM-5000	201261	2026/1/13	2027/1/12
	EMC104-SM-SM-1000	210103	2026/1/13	2027/1/12
	EMC104-SM-SM-3000	201241	2026/1/13	2027/1/12
	EMC104-SM-SM-9000	201244	2026/1/13	2027/1/12
Signal & Spectrum Analyzer R&S	FSV3044	101504	2025/6/18	2026/6/17
Software BV ADT	ADT_Radiated_ V7.7.1.1.1	N/A	N/A	N/A
Turn Table Max-Full	MFT-201SS	N/A	N/A	N/A
Turn Table Controller Max-Full	MF-7802BS	MF780208676	N/A	N/A

Notes:

1. The test was performed in WM - 966 chamber 9(Wenming).
2. Tested Date: 2026/5/25 ~ 2026/6/3

5 Limits of Test Items

5.1 RF Output Power

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

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

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

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

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

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

5.2 Power Spectral Density

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

5.3 6 dB Bandwidth

The minimum of 6 dB Bandwidth Measurement is 0.5 MHz.

5.4 Conducted Out of Band Emissions

Below 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

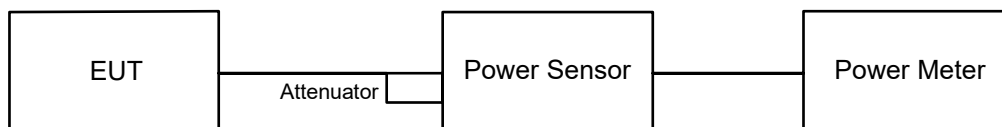
Notes:

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



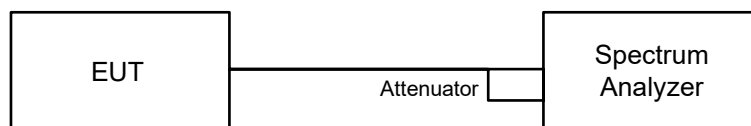
6.1.2 Test Procedure

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



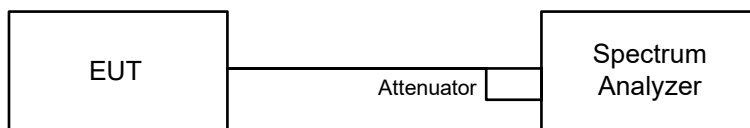
6.2.2 Test Procedure

- Measure the duty cycle (x).
- Set instrument center frequency to DTS channel center frequency.
- Set span to > 1.5 times the OBW.
- Set RBW to: $3 \text{ kHz} \leq \text{RBW} \leq 100 \text{ kHz}$.
- Set VBW $\geq 3 \times \text{RBW}$.
- Detector = power averaging (RMS) or sample detector (when RMS not available).
- Ensure that the number of measurement points in the sweep $\geq 2 \times \text{span/RBW}$.
- 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

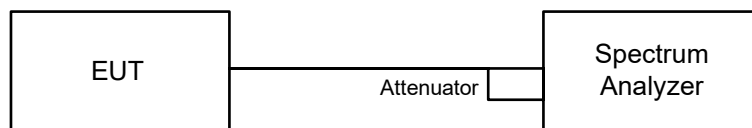


6.3.2 Test Procedure

- a. Set RBW = shall be in the range of 1% to 5% of the OBW but not less than 100 kHz.
- b. Set the VBW $\geq [3 \times \text{RBW}]$.
- c. Detector = peak.
- d. Trace mode = max-hold.
- e. Sweep = No faster than coupled (auto) time.
- f. Allow the trace to stabilize.
- g. Measure the maximum width of the emission by placing two markers, one at the lowest frequency and the other at the highest frequency of the envelope of the spectral display, such that each marker is at or slightly below the “-6 dB down amplitude”. If a marker is below this “-6 dB down amplitude” value, then it shall be as close as possible to this value.

6.4 Conducted Out of Band Emissions

6.4.1 Test Setup



6.4.2 Test Procedure

MEASUREMENT PROCEDURE REF

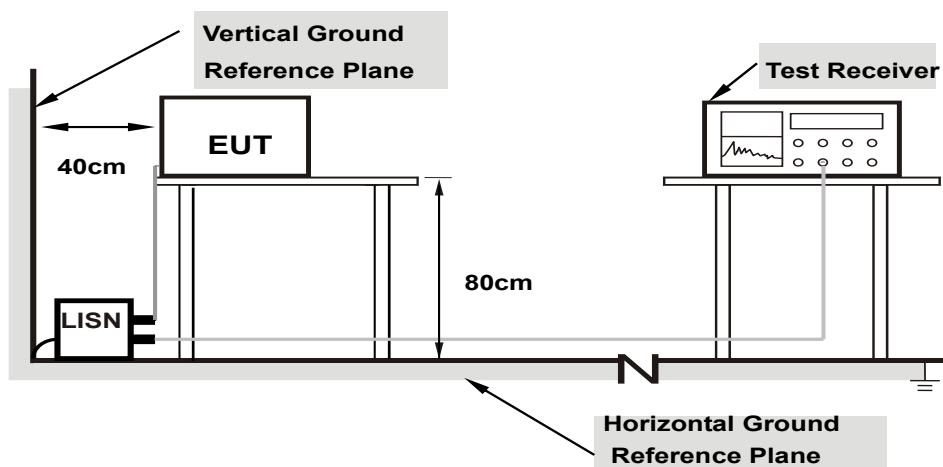
- Set instrument center frequency to DTS channel center frequency.
- Set the span to ≥ 1.5 times the DTS bandwidth.
- Set the RBW = 100 kHz.
- Set the VBW ≥ 300 kHz.
- Detector = peak.
- Sweep time = No faster than coupled (auto) time.
- Trace mode = max hold.
- Allow trace to fully stabilize.
- Use the peak marker function to determine the maximum PSD level.

MEASUREMENT PROCEDURE OOB

- Set the center frequency and span to encompass frequency range to be measured. Note that the frequency range might need to be divided into multiple frequency ranges to retain frequency resolution.
- Set RBW = 100 kHz.
- Set VBW ≥ 300 kHz.
- Detector = peak.
- Sweep = No faster than coupled (auto) time.
- 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

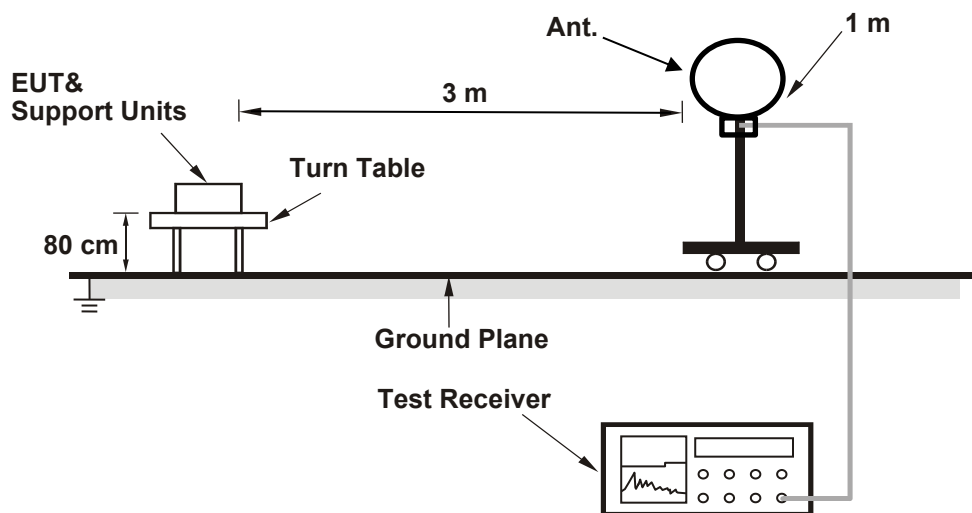
- Exploratory ac power-line conducted emission measurements: The EUT shall be operated on the mid channel and in the mode with highest output power unless the fundamental operates in the AC power-line emission test range then the EUT shall be operated in the range of typical modes of operation.
- The 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.

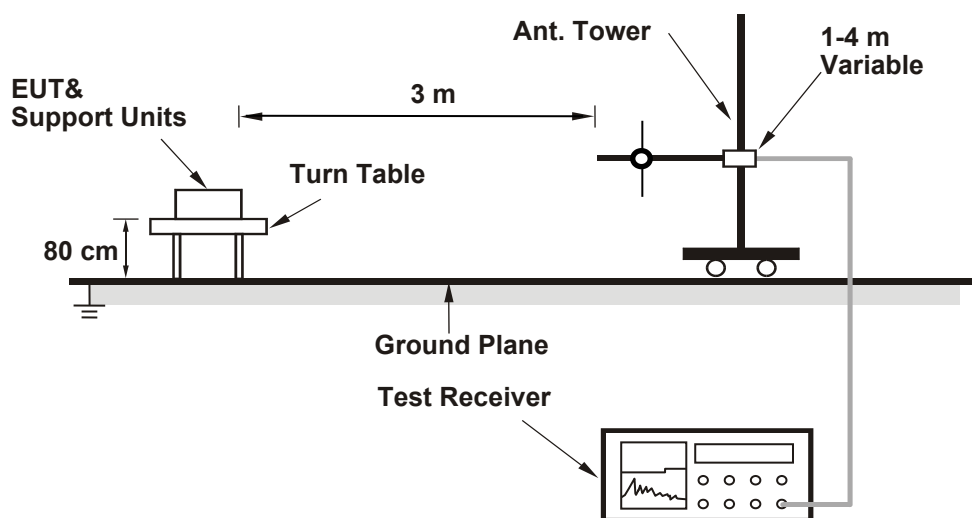
6.6 Unwanted Emissions below 1 GHz

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 (however, peak detector measurements may be used to determine compliance with QP requirements), 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

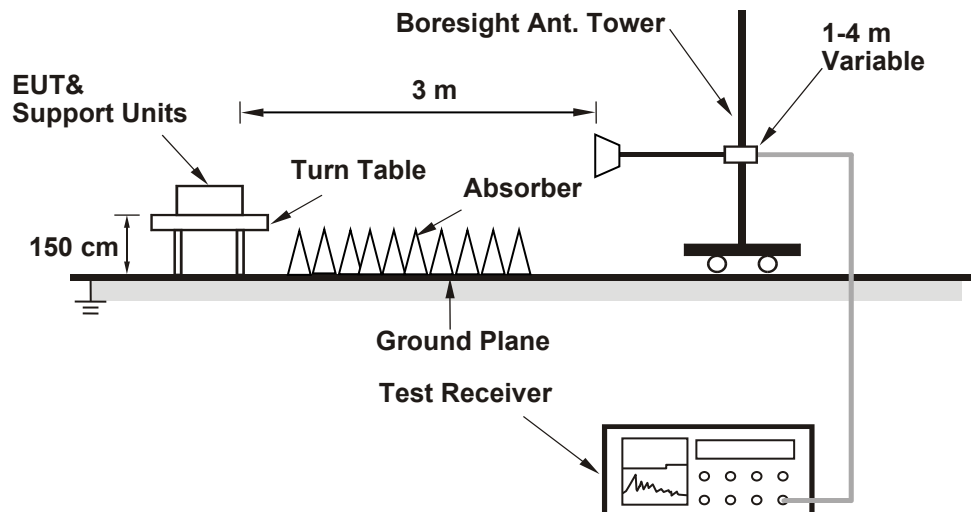
- a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at 3 meter chamber room for test. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the 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(QP) detect function, Average(AV) detect function, Peak(PK) detect function and specified bandwidth with maximum hold mode when the test frequencies less than or equal to 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 (however, peak detector measurements may be used to determine compliance with QP requirements).
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

Environmental Conditions:	25°C, 60% RH	Tested By:	Match Tsui
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802.11b

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Test Result
		Chain 0	Chain 1				
1	2412	19.02	19.16	162.213	22.10	30	Pass
6	2437	18.36	18.33	136.626	21.36	30	Pass
11	2462	17.92	17.35	116.269	20.65	30	Pass

Notes:

1. Directional gain is the maximum gain of antennas.
2. The maximum gain is 2.63 dBi $\leq$ 6 dBi, so the output power limit shall not be reduced.

802.11g

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Test Result
		Chain 0	Chain 1				
1	2412	16.12	16.26	83.193	19.20	30	Pass
6	2437	20.69	20.73	235.524	23.72	30	Pass
11	2462	16.65	16.18	87.734	19.43	30	Pass

Notes:

1. Directional gain is the maximum gain of antennas.
2. The maximum gain is 2.63 dBi $\leq$ 6 dBi, so the output power limit shall not be reduced.

802.11ax (HE20)

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Test Result
		Chain 0	Chain 1				
1	2412	16.34	16.74	90.259	19.55	30	Pass
6	2437	20.66	20.82	237.194	23.75	30	Pass
11	2462	13.91	13.15	45.257	16.56	30	Pass

Notes:

1. Directional gain is the maximum gain of antennas.
2. The maximum gain is 2.63 dBi $\leq$ 6 dBi, so the output power limit shall not be reduced.

802.11ax (HE40)

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Test Result
		Chain 0	Chain 1				
3	2422	15.57	15.02	67.827	18.31	30	Pass
6	2437	16.31	16.21	84.539	19.27	30	Pass
9	2452	10.29	9.98	20.645	13.15	30	Pass

Notes:

1. Directional gain is the maximum gain of antennas.
2. The maximum gain is 2.63 dBi <= 6 dBi, so the output power limit shall not be reduced.

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	16.34	16.74	90.259	19.55	30	Pass
6	2437	20.66	20.82	237.194	23.75	30	Pass
11	2462	13.91	13.15	45.257	16.56	30	Pass

Notes:

1. Directional gain = $10 \log[(10^{\text{Chain0/20}} + 10^{\text{Chain1/20}})^2 / 2]$
2. The directional gain is 5.5 dBi <= 6 dBi, so the output power limit shall not be reduced.

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	15.57	15.02	67.827	18.31	30	Pass
6	2437	16.31	16.21	84.539	19.27	30	Pass
9	2452	10.29	9.98	20.645	13.15	30	Pass

Notes:

1. Directional gain = $10 \log[(10^{\text{Chain0/20}} + 10^{\text{Chain1/20}})^2 / 2]$
2. The directional gain is 5.5 dBi <= 6 dBi, so the output power limit shall not be reduced.

802.11ax (RU52)

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Test Result
		Chain 0	Chain 1				
1	2412	11.61	11.74	29.416	14.69	30	Pass
6	2437	15.46	15.64	71.8	18.56	30	Pass
11	2462	8.96	8.72	15.318	11.85	30	Pass

Notes:

1. Directional gain is the maximum gain of antennas.
2. The maximum gain is 2.63 dBi <= 6 dBi, so the output power limit shall not be reduced.

802.11ax (RU106)

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Test Result
		Chain 0	Chain 1				
1	2412	14.59	14.73	58.491	17.67	30	Pass
6	2437	18.63	18.78	148.455	21.72	30	Pass
11	2462	12.13	11.88	31.748	15.02	30	Pass

Notes:

1. Directional gain is the maximum gain of antennas.
2. The maximum gain is 2.63 dBi <= 6 dBi, so the output power limit shall not be reduced.

802.11ax (RU52)-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	11.61	11.74	29.416	14.69	30	Pass
6	2437	15.46	15.64	71.8	18.56	30	Pass
11	2462	8.96	8.72	15.318	11.85	30	Pass

Notes:

1. Directional gain = $10 \log[(10^{\text{Chain0/20}} + 10^{\text{Chain1/20}})^2 / 2]$
2. The directional gain is 5.5 dBi <= 6 dBi, so the output power limit shall not be reduced.

802.11ax (RU106)-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	14.59	14.73	58.491	17.67	30	Pass
6	2437	18.63	18.78	148.455	21.72	30	Pass
11	2462	12.13	11.88	31.748	15.02	30	Pass

Notes:

1. Directional gain = $10 \log[(10^{\text{Chain0/20}} + 10^{\text{Chain1/20}})^2 / 2]$
2. The directional gain is 5.5 dBi <= 6 dBi, so the output power limit shall not be reduced.

7.2 Power Spectral Density

Environmental Conditions:	25°C, 60% RH	Tested By:	Match Tsui
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802.11b

Chan.	Chan. Freq. (MHz)	PSD w/o Duty Factor (dBm/3kHz)		Duty Factor (dB)	Conducted PSD (dBm/3kHz)	Total PSD (dBm/3kHz)	PSD Limit (dBm/3kHz)	Test Result
		Chain 0	Chain 1					
1	2412	-10.45	-8.93	0.22	-6.61	-6.39	8	Pass
6	2437	-9.49	-10.50	0.22	-6.96	-6.74	8	Pass
11	2462	-9.62	-10.60	0.22	-7.07	-6.85	8	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 5.5 dBi $\leq$ 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)	Conducted PSD (dBm/3kHz)	Total PSD (dBm/3kHz)	PSD Limit (dBm/3kHz)	Test Result
		Chain 0	Chain 1					
1	2412	-14.41	-13.23	0.21	-10.77	-10.56	8	Pass
6	2437	-9.73	-9.85	0.21	-6.78	-6.57	8	Pass
11	2462	-13.06	-13.65	0.21	-10.33	-10.12	8	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 5.5 dBi $\leq$ 6 dBi, so the power density limit shall not be reduced.

802.11ax (HE20)

Chan.	Chan. Freq. (MHz)	PSD w/o Duty Factor (dBm/3kHz)		Duty Factor (dB)	Conducted PSD (dBm/3kHz)	Total PSD (dBm/3kHz)	PSD Limit (dBm/3kHz)	Test Result
		Chain 0	Chain 1					
1	2412	-15.56	-16.05	0.27	-12.79	-12.52	8	Pass
6	2437	-9.86	-11.87	0.27	-7.74	-7.47	8	Pass
11	2462	-16.35	-17.02	0.27	-13.66	-13.39	8	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 5.5 dBi $\leq$ 6 dBi, so the power density limit shall not be reduced.

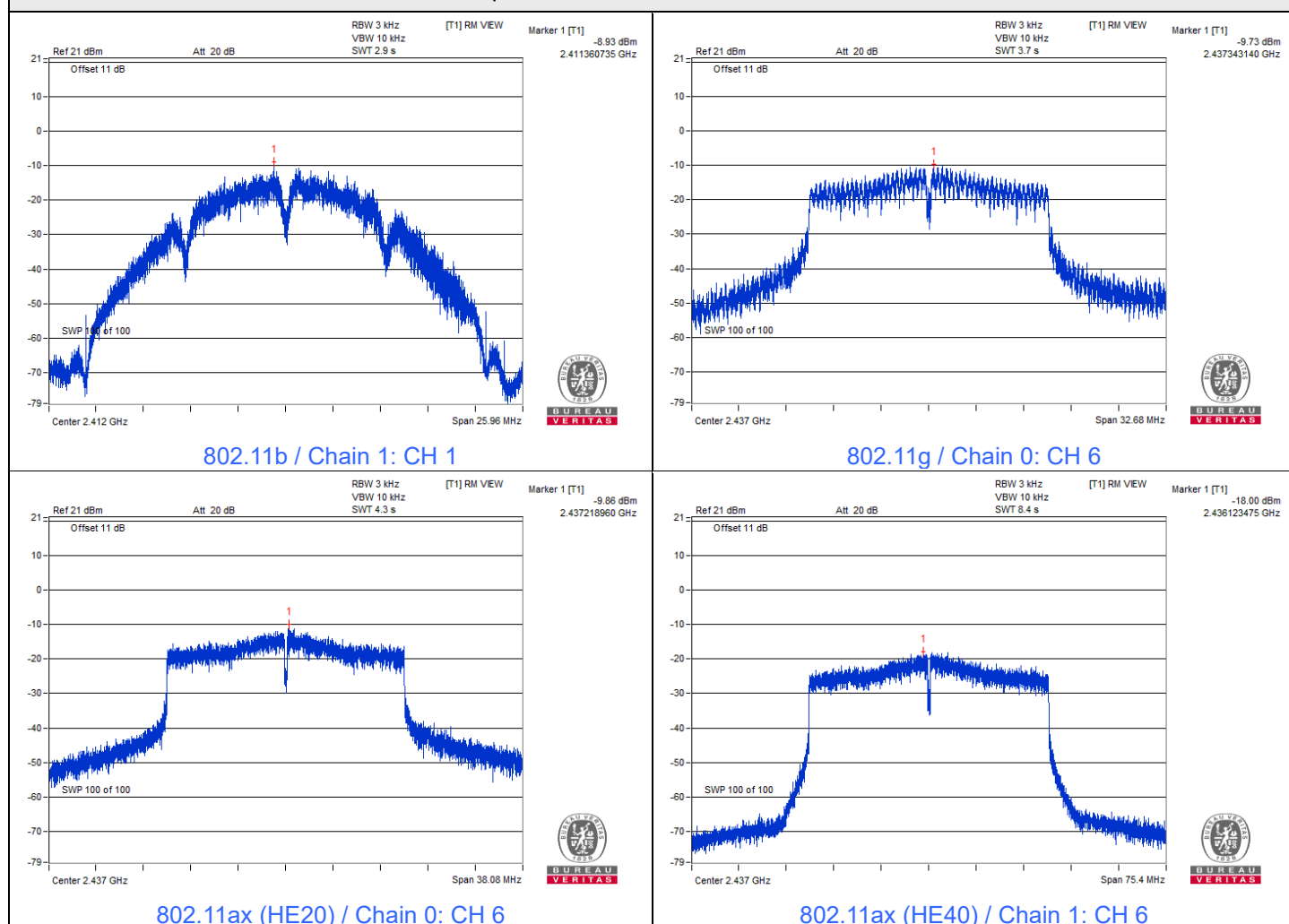
802.11ax (HE40)

Chan.	Chan. Freq. (MHz)	PSD w/o Duty Factor (dBm/3kHz)		Duty Factor (dB)	Conducted PSD (dBm/3kHz)	Total PSD (dBm/3kHz)	PSD Limit (dBm/3kHz)	Test Result
		Chain 0	Chain 1					
3	2422	-18.90	-19.32	0.29	-16.09	-15.80	8	Pass
6	2437	-19.37	-18.00	0.29	-15.62	-15.33	8	Pass
9	2452	-25.34	-24.85	0.29	-22.08	-21.79	8	Pass

Notes:

- Method E) 2) b) Measure and sum spectral maxima across the outputs of KDB 662911 is using for calculating total power density.
- Directional gain = $10 \log[(10^{\text{Chain0}/20} + 10^{\text{Chain1}/20})^2 / 2]$
- The directional gain is 5.5 dBi $\leq$ 6 dBi, so the power density limit shall not be reduced.

Spectrum Plot of Maximum Value



802.11ax (RU52)

Chan.	Chan. Freq. (MHz)	PSD w/o Duty Factor (dBm/3kHz)		Duty Factor (dB)	Conducted PSD (dBm/3kHz)	Total PSD (dBm/3kHz)	PSD Limit (dBm/3kHz)	Test Result
		Chain 0	Chain 1					
1	2412	-16.41	-16.30	0.21	-13.34	-13.13	8	Pass
6	2437	-10.80	-12.04	0.21	-8.37	-8.16	8	Pass
11	2462	-17.47	-17.37	0.21	-14.41	-14.20	8	Pass

Notes:

- Method E) 2) b) Measure and sum spectral maxima across the outputs of KDB 662911 is using for calculating total power density.
- Directional gain = $10 \log[(10^{\text{Chain0}/20} + 10^{\text{Chain1}/20})^2 / 2]$
- The directional gain is 5.5 dBi $\leq$ 6 dBi, so the power density limit shall not be reduced.

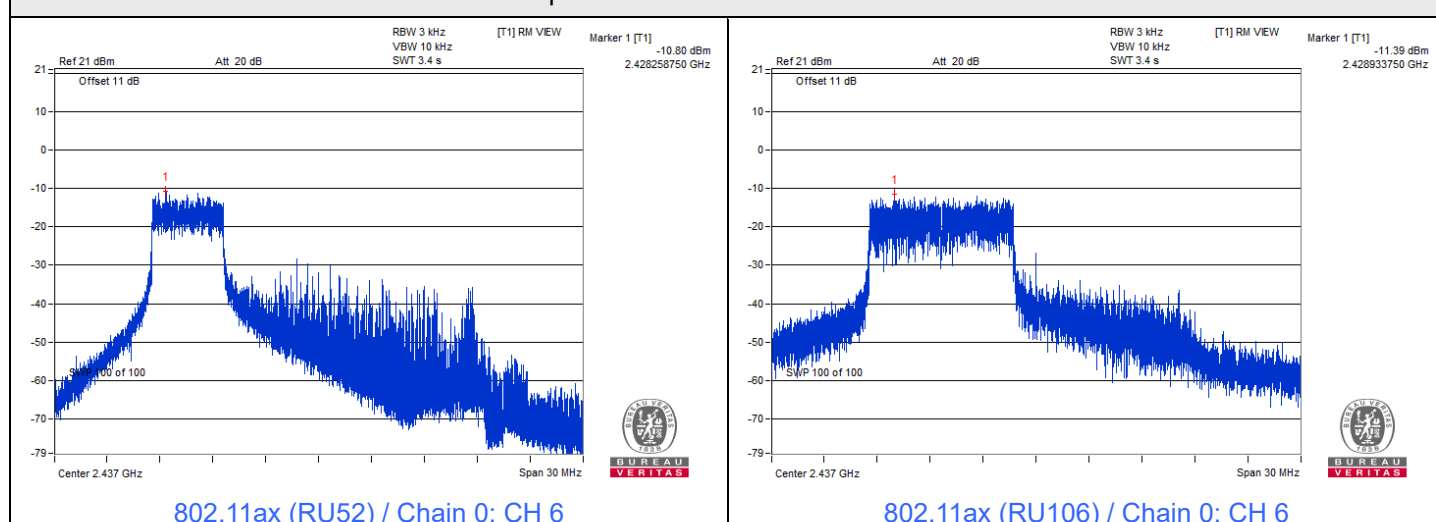
802.11ax (RU106)

Chan.	Chan. Freq. (MHz)	PSD w/o Duty Factor (dBm/3kHz)		Duty Factor (dB)	Conducted PSD (dBm/3kHz)	Total PSD (dBm/3kHz)	PSD Limit (dBm/3kHz)	Test Result
		Chain 0	Chain 1					
1	2412	-16.24	-16.57	0.58	-13.39	-12.81	8	Pass
6	2437	-11.39	-12.45	0.58	-8.88	-8.30	8	Pass
11	2462	-17.20	-17.59	0.58	-14.38	-13.80	8	Pass

Notes:

- Method E) 2) b) Measure and sum spectral maxima across the outputs of KDB 662911 is using for calculating total power density.
- Directional gain = $10 \log[(10^{\text{Chain0}/20} + 10^{\text{Chain1}/20})^2 / 2]$
- The directional gain is 5.5 dBi $\leq$ 6 dBi, so the power density limit shall not be reduced.

Spectrum Plot of Maximum Value



7.3 6 dB Bandwidth

Environmental Conditions:	25°C, 60% RH	Tested By:	Match Tsui
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802.11b

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)		Minimum Limit (MHz)	Test Result
		Chain 0	Chain 1		
1	2412	8.24	8.21	0.5	Pass
6	2437	8.25	8.26	0.5	Pass
11	2462	8.23	8.23	0.5	Pass

802.11g

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)		Minimum Limit (MHz)	Test Result
		Chain 0	Chain 1		
1	2412	15.91	15.42	0.5	Pass
6	2437	15.90	15.43	0.5	Pass
11	2462	15.79	15.42	0.5	Pass

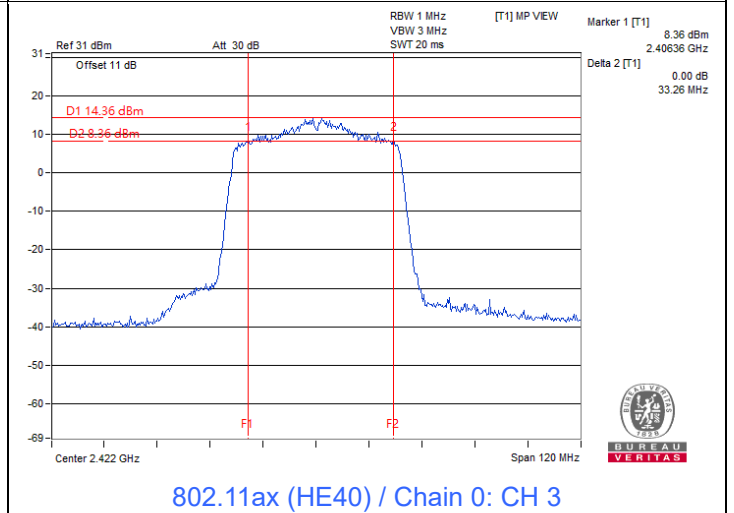
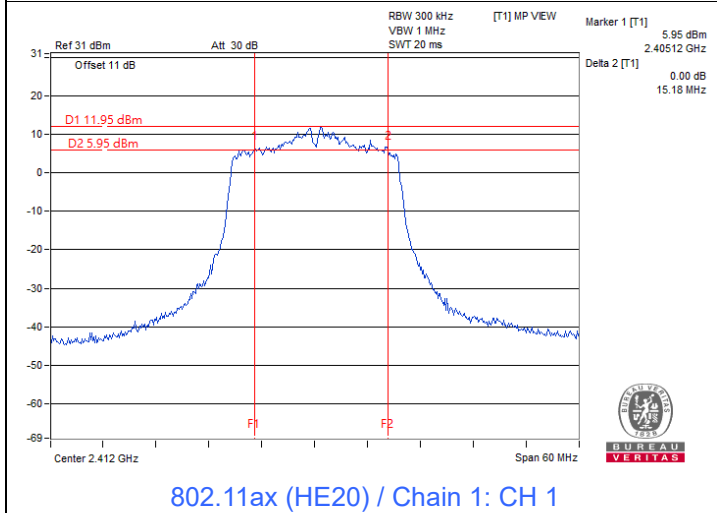
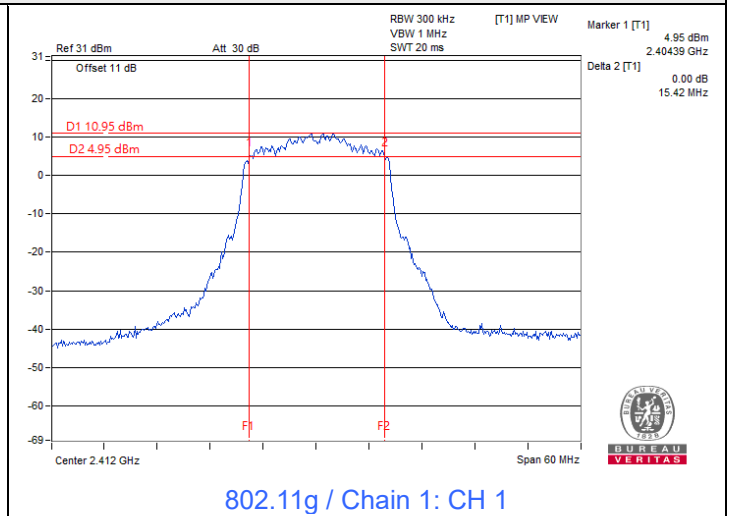
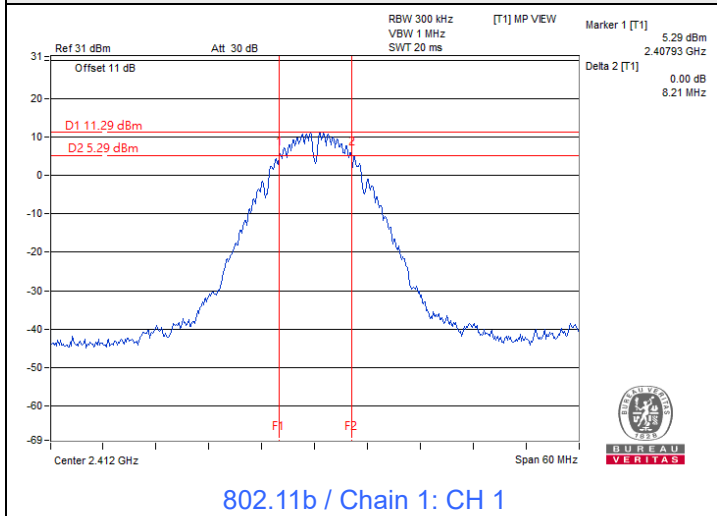
802.11ax (HE20)

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)		Minimum Limit (MHz)	Test Result
		Chain 0	Chain 1		
1	2412	18.06	15.18	0.5	Pass
6	2437	18.08	16.56	0.5	Pass
11	2462	16.85	16.38	0.5	Pass

802.11ax (HE40)

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)		Minimum Limit (MHz)	Test Result
		Chain 0	Chain 1		
3	2422	33.26	34.64	0.5	Pass
6	2437	35.41	35.82	0.5	Pass
9	2452	33.49	34.22	0.5	Pass

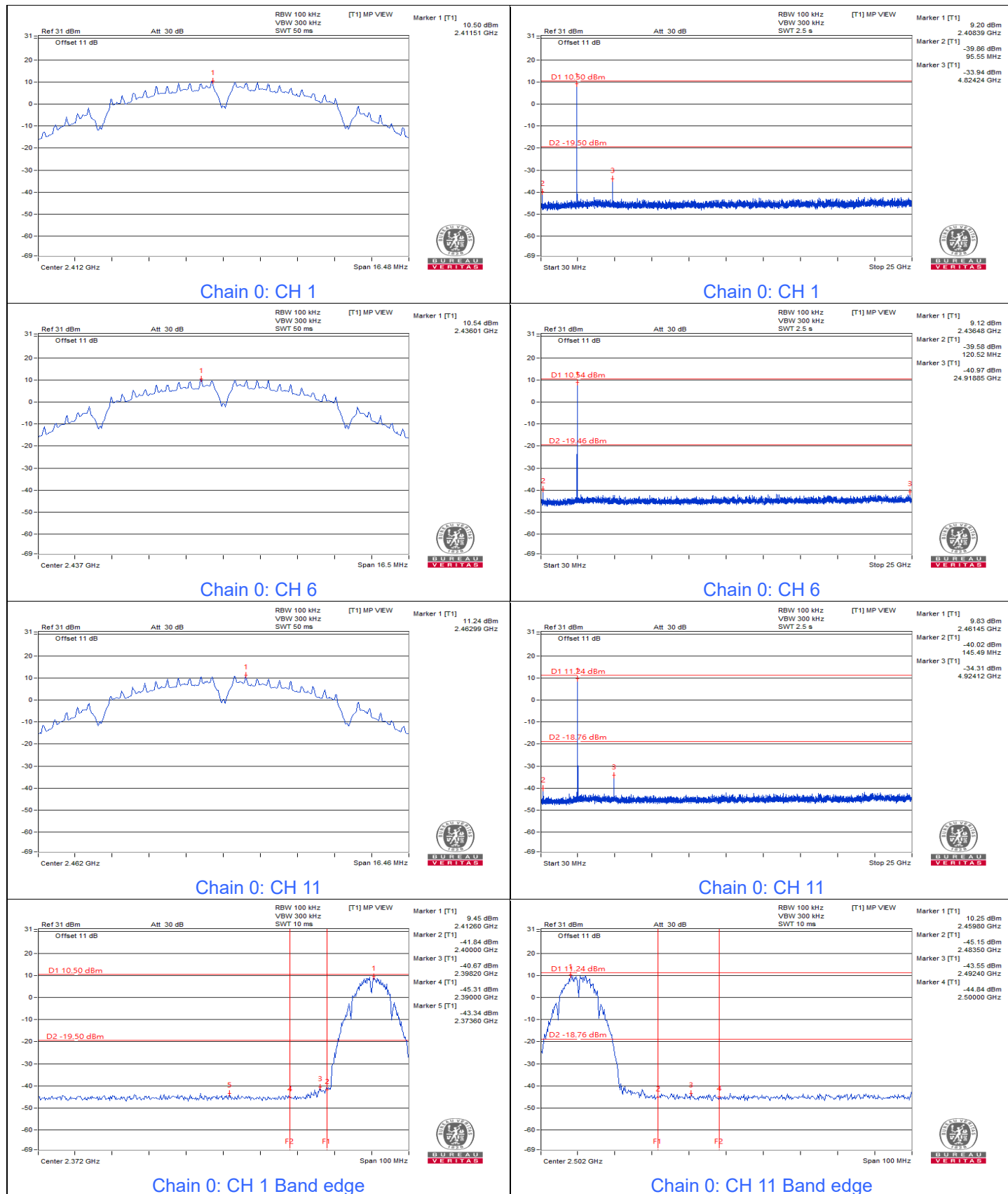
Spectrum Plot of Minimum Value

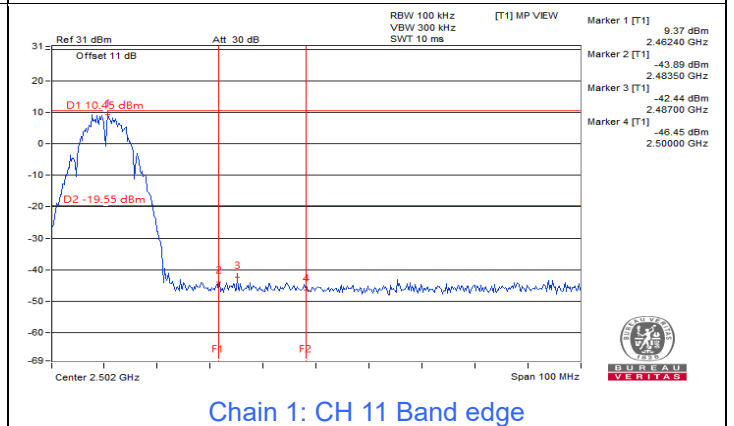
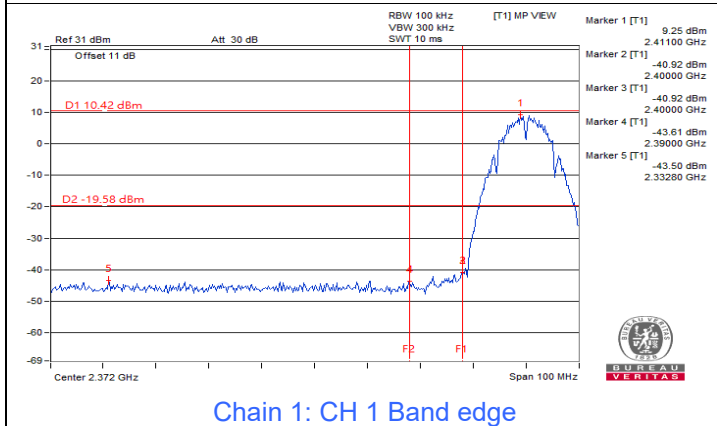
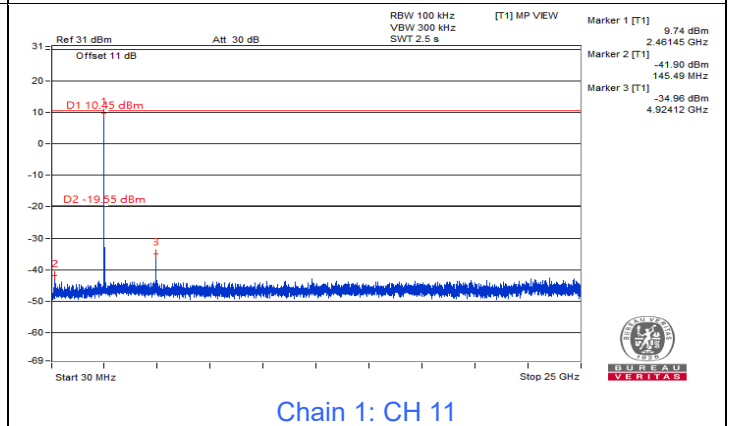
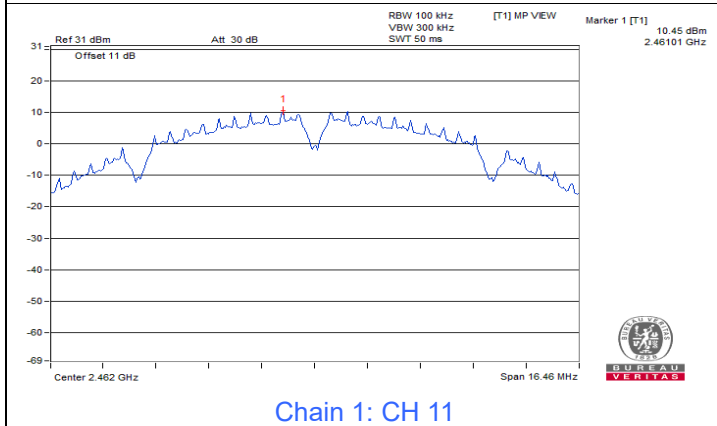
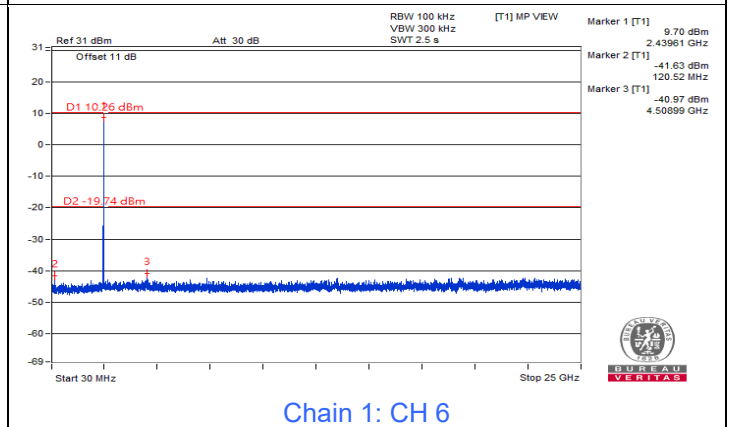
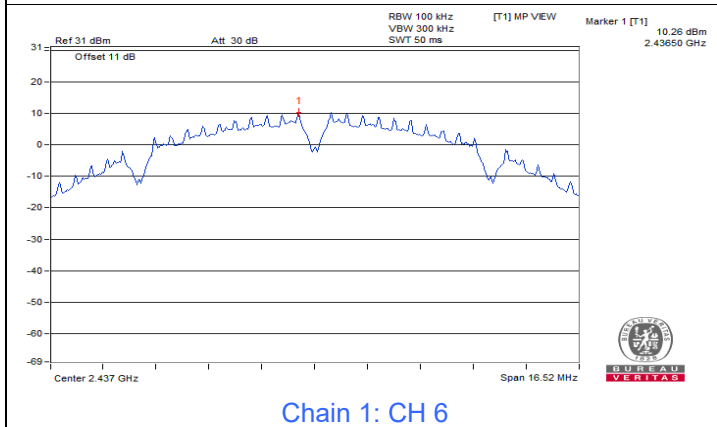
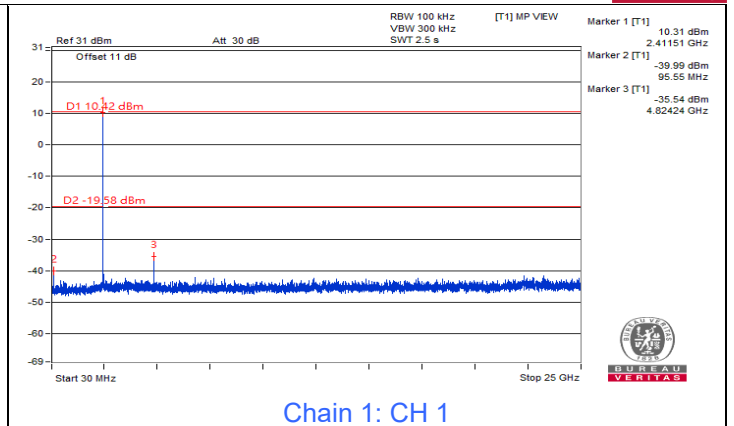
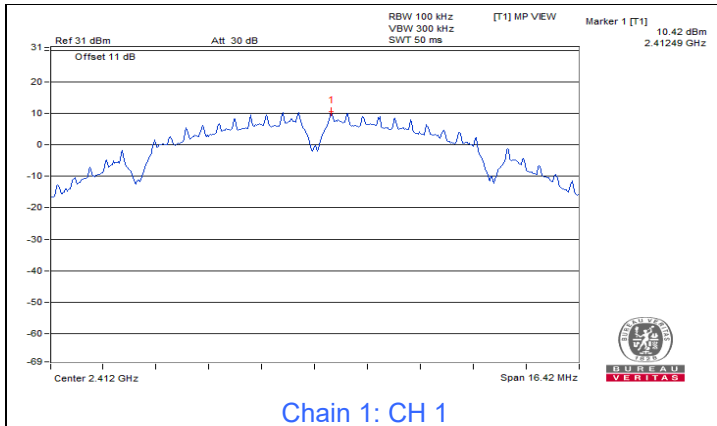


7.4 Conducted Out of Band Emissions

Environmental Conditions:	25°C, 60% RH	Tested By:	Match Tsui
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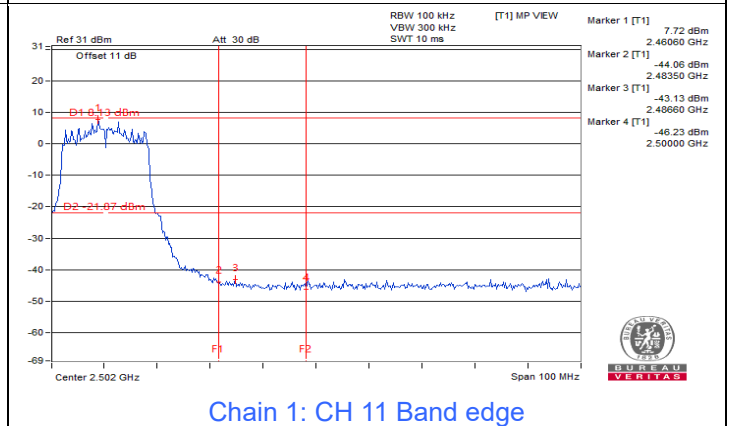
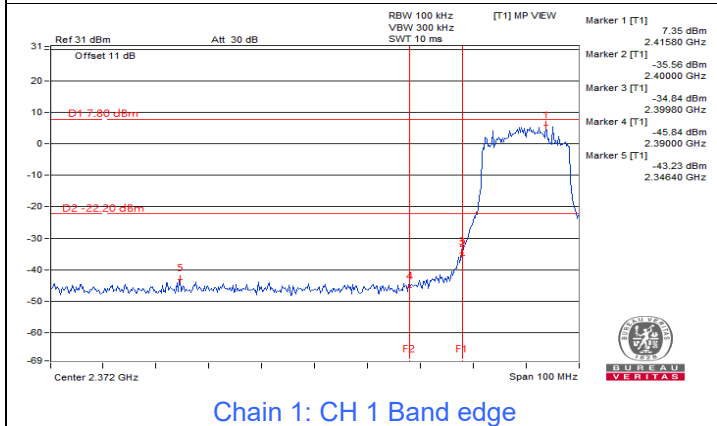
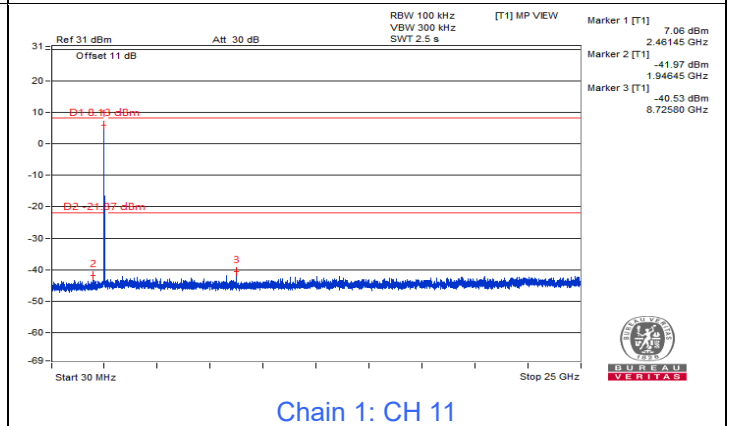
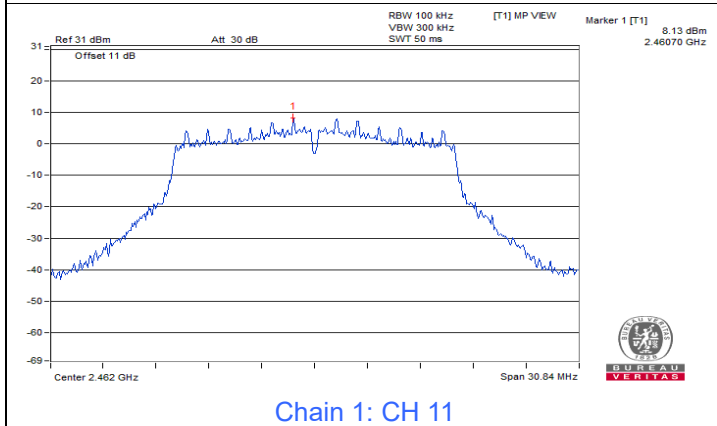
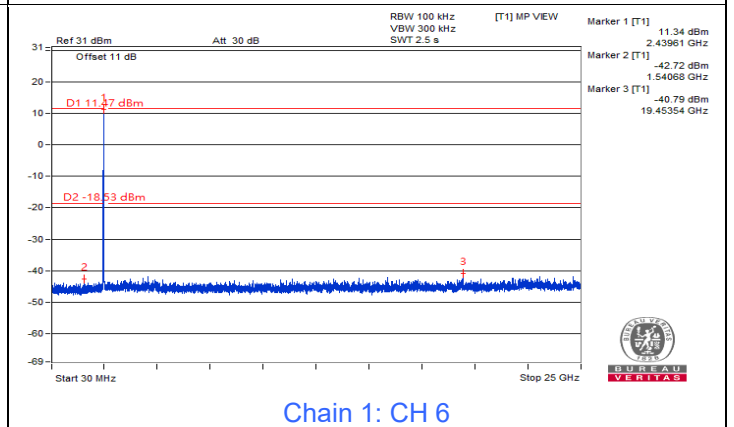
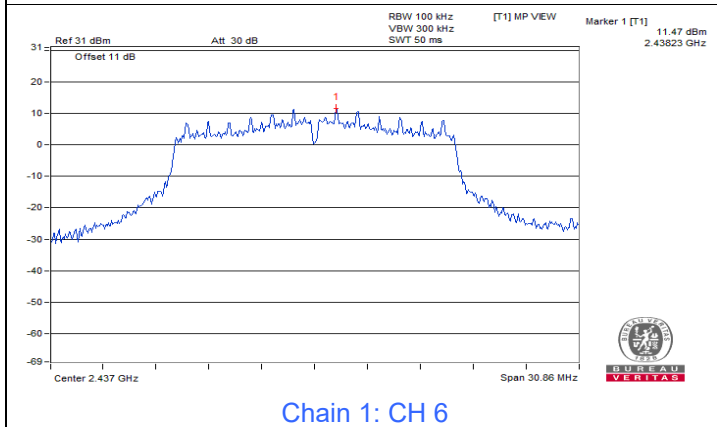
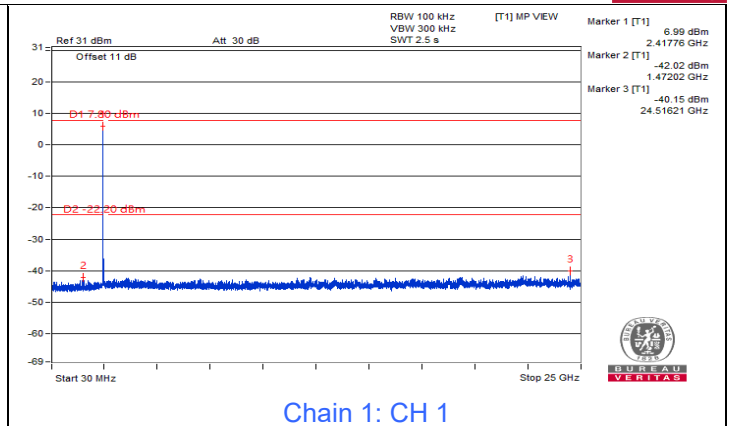
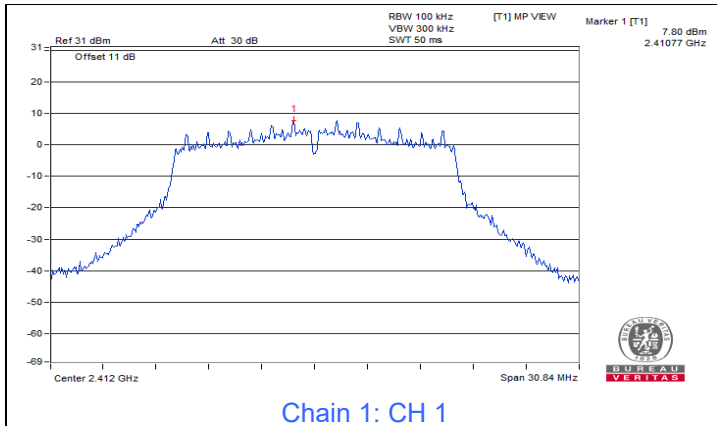
802.11b





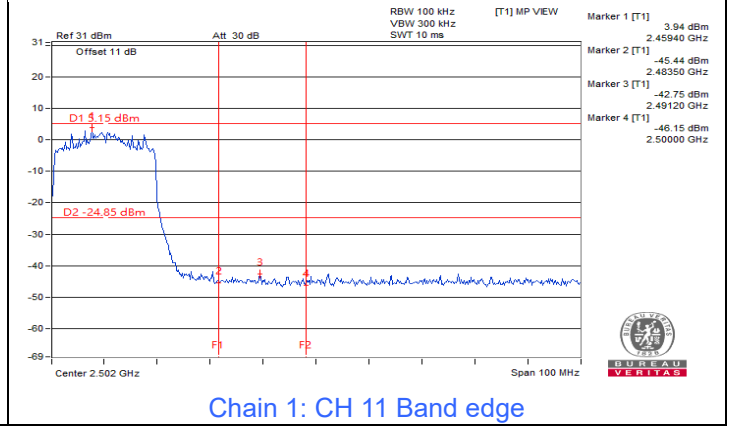
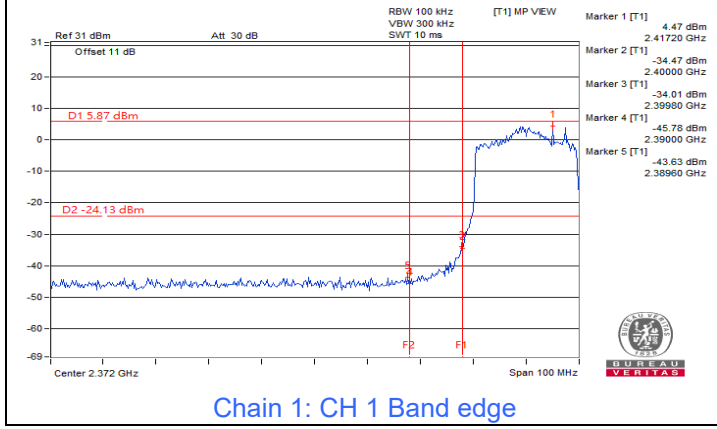
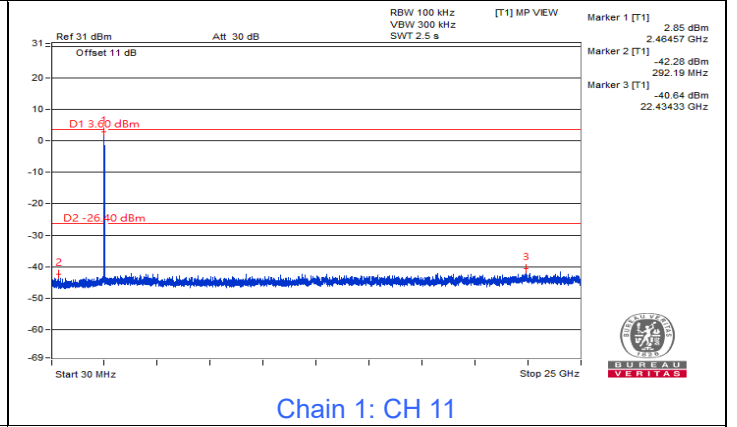
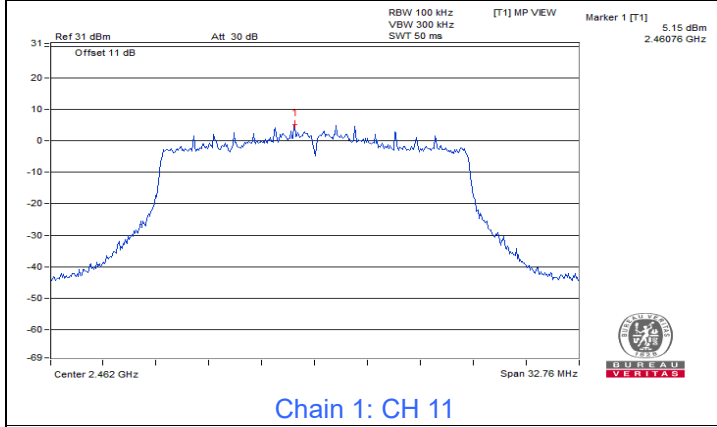
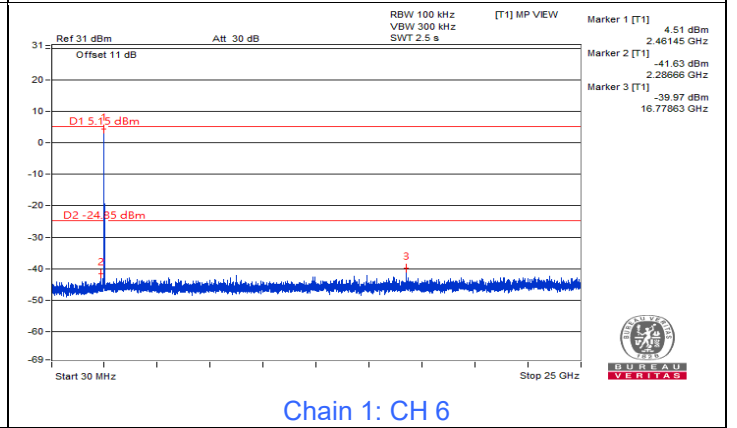
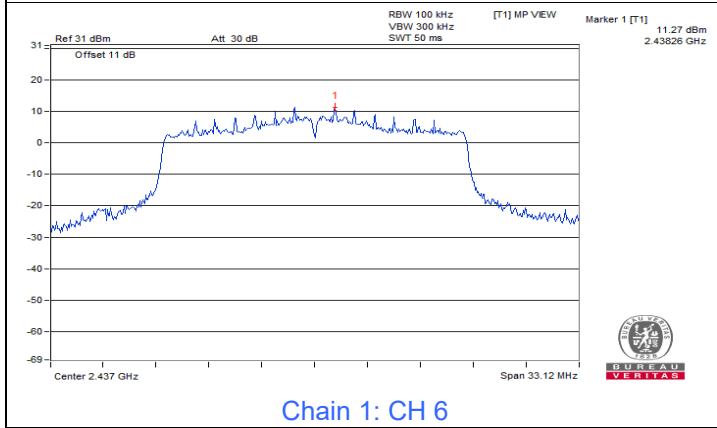
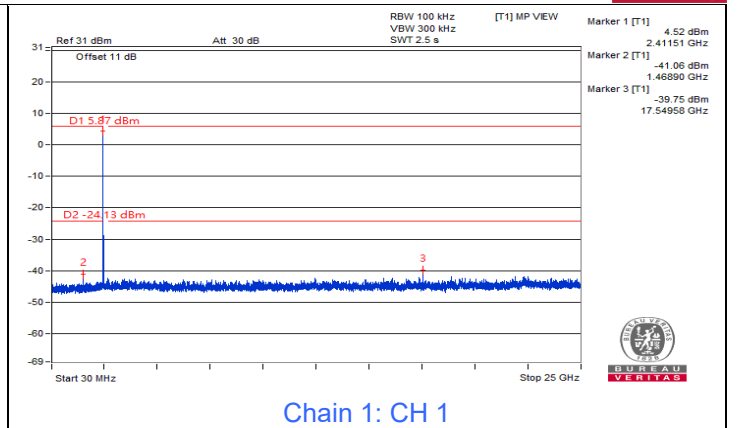
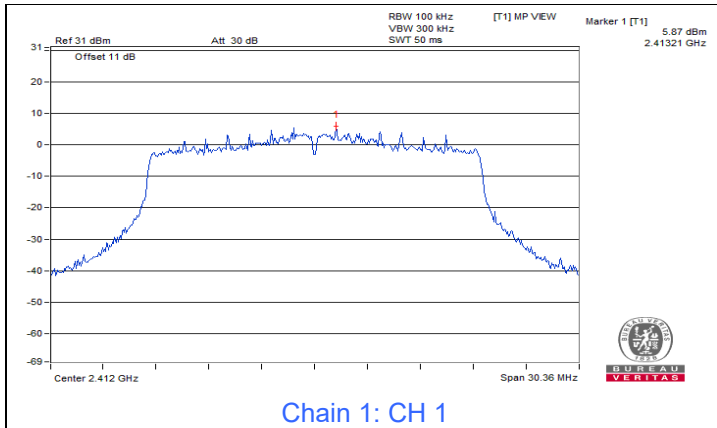
802.11g





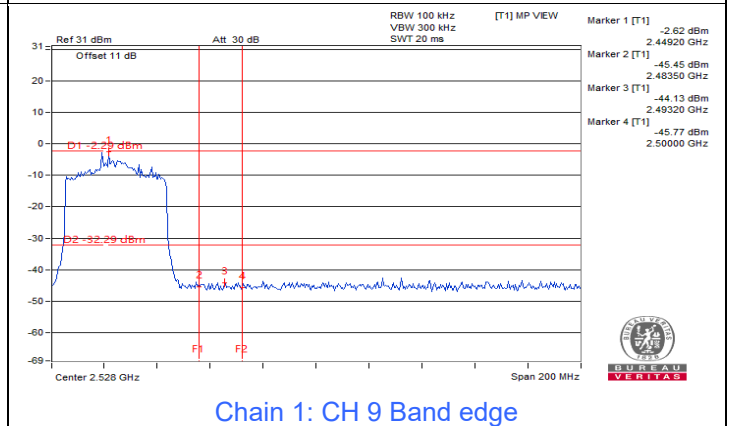
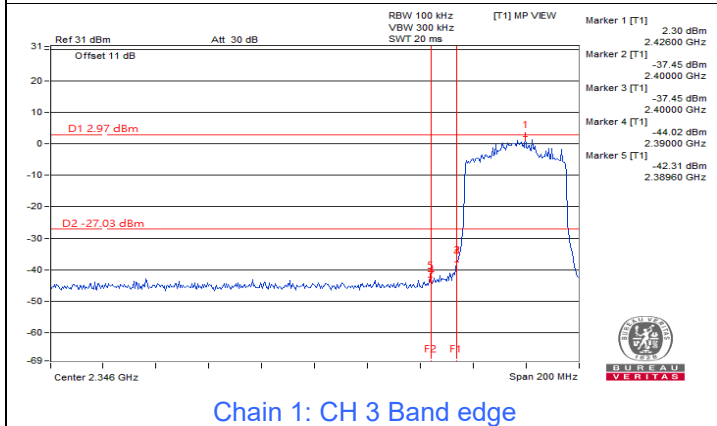
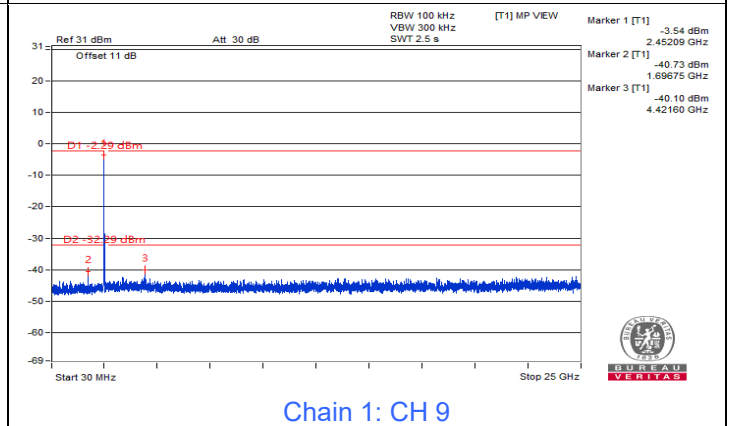
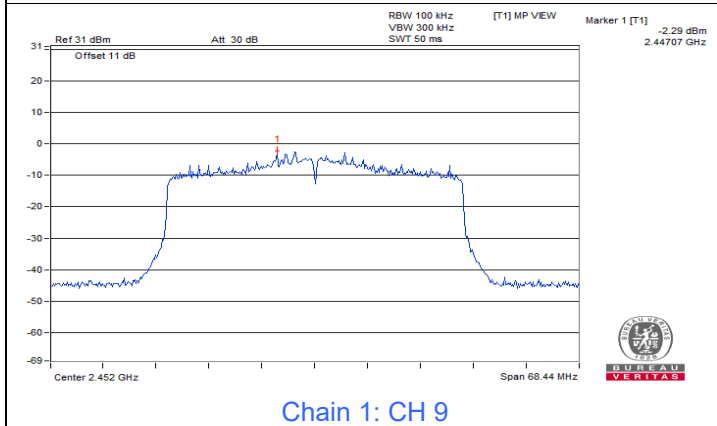
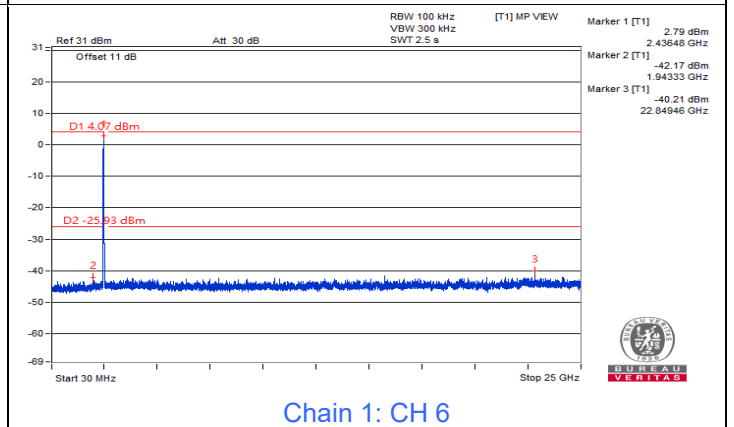
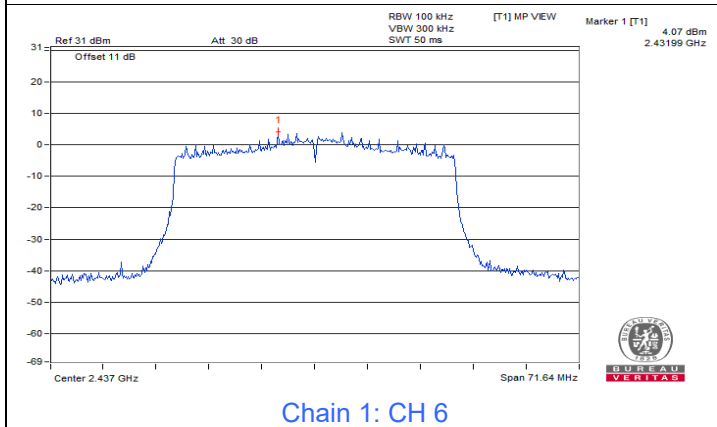
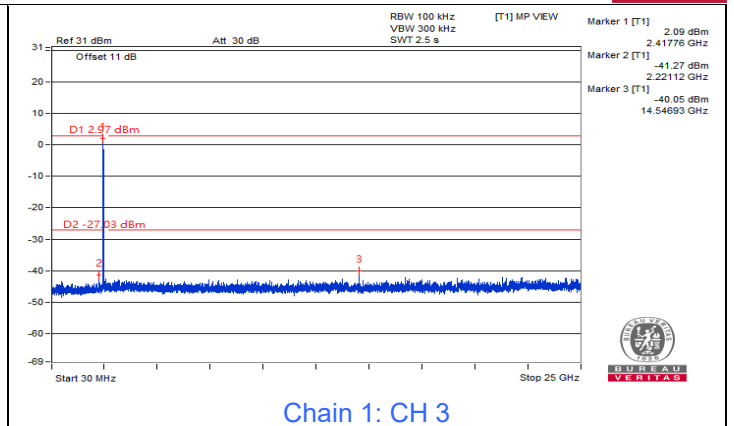
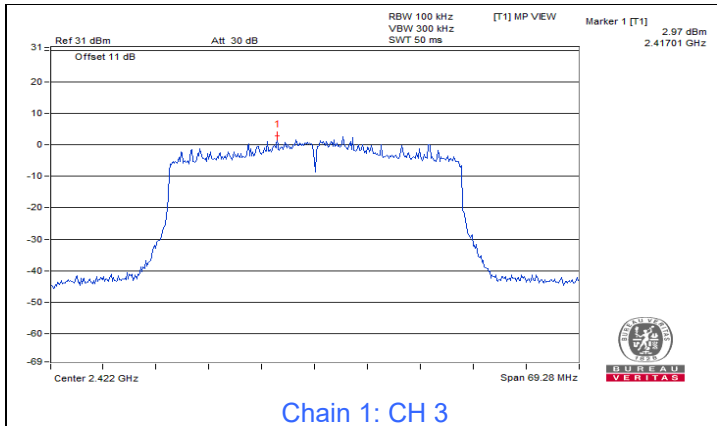
802.11ax (HE20)





802.11ax (HE40)





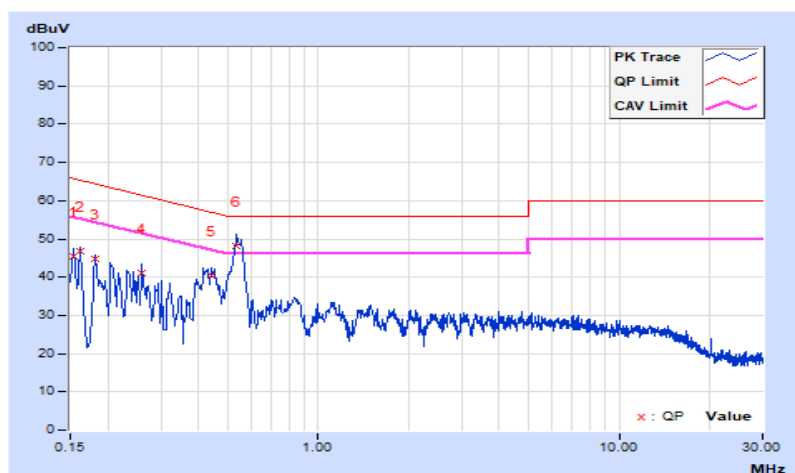
7.5 AC Power Conducted Emissions

RF Mode	802.11ax (HE20)	Channel	CH 6 : 2437 MHz
Frequency Range	150 kHz ~ 30 MHz	Detector Function & Resolution Bandwidth	Quasi-Peak (QP) / Average (AV), 9 kHz
Input Power	120 Vac, 60 Hz	Environmental Conditions	25 °C, 75% RH
Tested By	Greg Lin		

Phase Of Power : Line (L)										
No	Frequency (MHz)	Correction Factor (dB)	Reading Value (dBuV)		Emission Level (dBuV)		Limit (dBuV)		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15391	9.72	35.78	20.31	45.50	30.03	65.79	55.79	-20.29	-25.76
2	0.16173	9.73	37.13	23.07	46.86	32.80	65.37	55.37	-18.51	-22.57
3	0.18122	9.75	35.00	21.27	44.75	31.02	64.43	54.43	-19.68	-23.41
4	0.25948	9.78	31.17	19.55	40.95	29.33	61.45	51.45	-20.50	-22.12
5	0.44325	9.80	30.58	23.33	40.38	33.13	57.00	47.00	-16.62	-13.87
6	0.53709	9.81	38.18	30.39	47.99	40.20	56.00	46.00	-8.01	-5.80

Remarks:

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

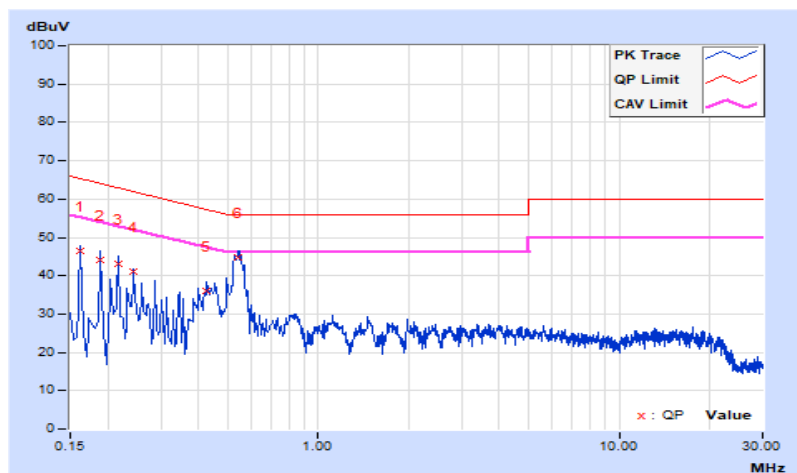


RF Mode	802.11ax (HE20)	Channel	CH 6 : 2437 MHz
Frequency Range	150 kHz ~ 30 MHz	Detector Function & Resolution Bandwidth	Quasi-Peak (QP) / Average (AV), 9 kHz
Input Power	120 Vac, 60 Hz	Environmental Conditions	25 °C, 75% RH
Tested By	Greg Lin		

Phase Of Power : Neutral (N)										
No	Frequency (MHz)	Correction Factor (dB)	Reading Value (dBuV)		Emission Level (dBuV)		Limit (dBuV)		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.16173	9.72	36.65	22.05	46.37	31.77	65.37	55.37	-19.00	-23.60
2	0.18910	9.73	34.34	19.41	44.07	29.14	64.08	54.08	-20.01	-24.94
3	0.21647	9.75	33.51	19.00	43.26	28.75	62.95	52.95	-19.69	-24.20
4	0.24384	9.76	31.48	17.48	41.24	27.24	61.96	51.96	-20.72	-24.72
5	0.42761	9.84	26.33	19.46	36.17	29.30	57.30	47.30	-21.13	-18.00
6	0.54090	9.87	34.96	27.05	44.83	36.92	56.00	46.00	-11.17	-9.08

Remarks:

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



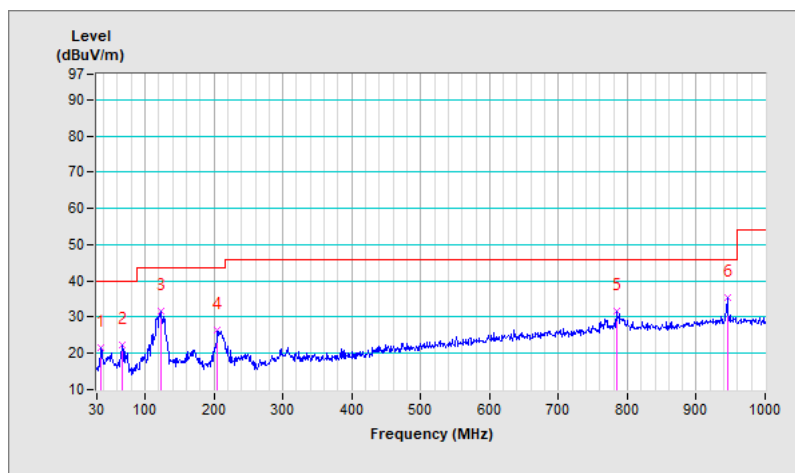
7.6 Unwanted Emissions below 1 GHz

RF Mode	802.11ax (HE20)	Channel	CH 6 : 2437 MHz
Frequency Range	30 MHz ~ 1 GHz	Detector Function & Bandwidth	QP: RB=120 kHz, DET=Quasi-Peak
Input Power	120 Vac, 60 Hz	Environmental Conditions	22 °C, 68% RH
Tested By	Greg 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	35.82	21.5 QP	40.0	-18.5	1.25 H	242	35.6	-14.1
2	66.86	22.3 QP	40.0	-17.7	1.00 H	185	36.8	-14.5
3	122.15	31.6 QP	43.5	-11.9	1.50 H	240	46.5	-14.9
4	204.60	26.3 QP	43.5	-17.2	1.25 H	223	42.5	-16.2
5	783.69	31.6 QP	46.0	-14.4	1.00 H	204	33.7	-2.1
6	944.71	35.5 QP	46.0	-10.5	1.25 H	202	35.4	0.1

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.

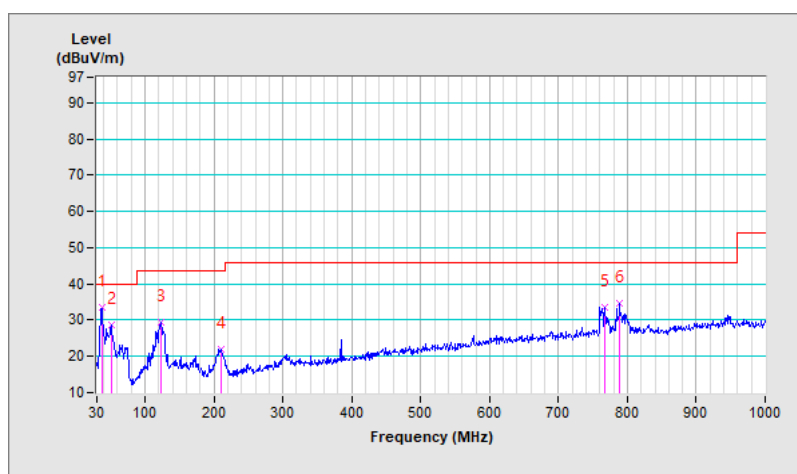


RF Mode	802.11ax (HE20)	Channel	CH 6 : 2437 MHz
Frequency Range	30 MHz ~ 1 GHz	Detector Function & Bandwidth	QP: RB=120 kHz, DET=Quasi-Peak
Input Power	120 Vac, 60 Hz	Environmental Conditions	22 °C, 68% RH
Tested By	Greg Lin		

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	36.79	33.4 QP	40.0	-6.6	1.00 V	261	47.2	-13.8
2	50.37	28.6 QP	40.0	-11.4	1.25 V	230	41.6	-13.0
3	122.15	29.5 QP	43.5	-14.0	1.50 V	283	44.4	-14.9
4	211.39	22.1 QP	43.5	-21.4	1.25 V	261	38.2	-16.1
5	767.20	33.4 QP	46.0	-12.6	1.00 V	306	35.9	-2.5
6	788.54	34.8 QP	46.0	-11.2	1.25 V	187	37.0	-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 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=200 Hz, DET=Peak
Input Power	120 Vac, 60 Hz	Environmental Conditions	22 °C, 68% RH
Tested By	Greg 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	2390.00	59.0 PK	74.0	-15.0	2.56 H	258	26.1	32.9
2	2390.00	46.1 AV	54.0	-7.9	2.56 H	258	13.2	32.9
3	*2412.00	103.2 PK			2.56 H	258	70.3	32.9
4	*2412.00	100.6 AV			2.56 H	258	67.7	32.9
5	4824.00	56.5 PK	74.0	-17.5	1.85 H	62	51.1	5.4
6	4824.00	50.9 AV	54.0	-3.1	1.85 H	62	45.5	5.4
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2390.00	59.6 PK	74.0	-14.4	2.45 V	197	26.7	32.9
2	2390.00	48.0 AV	54.0	-6.0	2.45 V	197	15.1	32.9
3	*2412.00	111.8 PK			2.45 V	197	78.9	32.9
4	*2412.00	109.3 AV			2.45 V	197	76.4	32.9
5	4824.00	55.3 PK	74.0	-18.7	1.38 V	42	49.9	5.4
6	4824.00	49.5 AV	54.0	-4.5	1.38 V	42	44.1	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.
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=200 Hz, DET=Peak
Input Power	120 Vac, 60 Hz	Environmental Conditions	23 °C, 68% RH
Tested By	Greg 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	*2437.00	102.8 PK			2.50 H	259	69.9	32.9
2	*2437.00	100.2 AV			2.50 H	259	67.3	32.9
3	4874.00	56.9 PK	74.0	-17.1	1.92 H	293	51.6	5.3
4	4874.00	51.0 AV	54.0	-3.0	1.92 H	293	45.7	5.3
5	7311.00	59.5 PK	74.0	-14.5	2.15 H	87	48.7	10.8
6	7311.00	50.2 AV	54.0	-3.8	2.15 H	87	39.4	10.8
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	111.1 PK			2.57 V	165	78.2	32.9
2	*2437.00	108.5 AV			2.57 V	165	75.6	32.9
3	4874.00	55.9 PK	74.0	-18.1	1.33 V	40	50.6	5.3
4	4874.00	50.1 AV	54.0	-3.9	1.33 V	40	44.8	5.3
5	7311.00	58.0 PK	74.0	-16.0	2.11 V	352	47.2	10.8
6	7311.00	47.3 AV	54.0	-6.7	2.11 V	352	36.5	10.8

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=200 Hz, DET=Peak
Input Power	120 Vac, 60 Hz	Environmental Conditions	23 °C, 68% RH
Tested By	Greg 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	*2462.00	102.9 PK			2.51 H	257	70.0	32.9
2	*2462.00	100.4 AV			2.51 H	257	67.5	32.9
3	2483.50	60.0 PK	74.0	-14.0	2.51 H	257	27.1	32.9
4	2483.50	47.3 AV	54.0	-6.7	2.51 H	257	14.4	32.9
5	4924.00	55.8 PK	74.0	-18.2	1.70 H	276	50.5	5.3
6	4924.00	50.5 AV	54.0	-3.5	1.70 H	276	45.2	5.3
7	7386.00	58.7 PK	74.0	-15.3	2.18 H	84	47.7	11.0
8	7386.00	49.8 AV	54.0	-4.2	2.18 H	84	38.8	11.0
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	111.3 PK			2.53 V	164	78.4	32.9
2	*2462.00	108.7 AV			2.53 V	164	75.8	32.9
3	2483.50	60.5 PK	74.0	-13.5	2.53 V	164	27.6	32.9
4	2483.50	48.6 AV	54.0	-5.4	2.53 V	164	15.7	32.9
5	4924.00	54.9 PK	74.0	-19.1	2.51 V	173	49.6	5.3
6	4924.00	49.6 AV	54.0	-4.4	2.51 V	173	44.3	5.3
7	7386.00	55.7 PK	74.0	-18.3	2.07 V	351	44.7	11.0
8	7386.00	46.8 AV	54.0	-7.2	2.07 V	351	35.8	11.0

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.
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=1 kHz, DET=Peak
Input Power	120 Vac, 60 Hz	Environmental Conditions	23 °C, 68% RH
Tested By	Greg 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	2390.00	59.8 PK	74.0	-14.2	2.50 H	263	26.9	32.9
2	2390.00	46.7 AV	54.0	-7.3	2.50 H	263	13.8	32.9
3	*2412.00	105.3 PK			2.50 H	263	72.4	32.9
4	*2412.00	95.2 AV			2.50 H	263	62.3	32.9
5	4824.00	56.2 PK	74.0	-17.8	1.94 H	298	50.8	5.4
6	4824.00	42.1 AV	54.0	-11.9	1.94 H	298	36.7	5.4
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2390.00	65.5 PK	74.0	-8.5	2.44 V	180	32.6	32.9
2	2390.00	50.4 AV	54.0	-3.6	2.44 V	180	17.5	32.9
3	*2412.00	113.7 PK			2.44 V	180	80.8	32.9
4	*2412.00	103.4 AV			2.44 V	180	70.5	32.9
5	4824.00	55.7 PK	74.0	-18.3	2.58 V	177	50.3	5.4
6	4824.00	41.6 AV	54.0	-12.4	2.58 V	177	36.2	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.
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=1 kHz, DET=Peak
Input Power	120 Vac, 60 Hz	Environmental Conditions	23 °C, 68% RH
Tested By	Greg 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	*2437.00	109.5 PK			2.53 H	264	76.6	32.9
2	*2437.00	99.4 AV			2.53 H	264	66.5	32.9
3	4874.00	56.1 PK	74.0	-17.9	1.96 H	301	50.8	5.3
4	4874.00	42.0 AV	54.0	-12.0	1.96 H	301	36.7	5.3
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2437.00	117.7 PK			2.57 V	313	84.8	32.9
2	*2437.00	107.5 AV			2.57 V	313	74.6	32.9
3	4874.00	55.9 PK	74.0	-18.1	2.53 V	179	50.6	5.3
4	4874.00	41.7 AV	54.0	-12.3	2.53 V	179	36.4	5.3

Remarks:

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

RF Mode	802.11g	Channel	CH 11 : 2462 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=1 kHz, DET=Peak
Input Power	120 Vac, 60 Hz	Environmental Conditions	23 °C, 68% RH
Tested By	Greg 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	*2462.00	105.6 PK			2.49 H	264	72.7	32.9
2	*2462.00	95.5 AV			2.49 H	264	62.6	32.9
3	2483.50	61.4 PK	74.0	-12.6	2.49 H	264	28.5	32.9
4	2483.50	49.0 AV	54.0	-5.0	2.49 H	264	16.1	32.9
5	4924.00	55.7 PK	74.0	-18.3	1.91 H	295	50.4	5.3
6	4924.00	41.6 AV	54.0	-12.4	1.91 H	295	36.3	5.3
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2462.00	114.2 PK			2.51 V	274	81.3	32.9
2	*2462.00	103.7 AV			2.51 V	274	70.8	32.9
3	2483.50	63.8 PK	74.0	-10.2	2.51 V	274	30.9	32.9
4	2483.50	50.7 AV	54.0	-3.3	2.51 V	274	17.8	32.9
5	4924.00	54.9 PK	74.0	-19.1	2.59 V	172	49.6	5.3
6	4924.00	41.1 AV	54.0	-12.9	2.59 V	172	35.8	5.3

Remarks:

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

RF Mode	802.11ax (HE20)	Channel	CH 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=200 Hz, DET=Peak
Input Power	120 Vac, 60 Hz	Environmental Conditions	23 °C, 68% RH
Tested By	Greg 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	2390.00	59.3 PK	74.0	-14.7	2.51 H	263	26.4	32.9
2	2390.00	47.5 AV	54.0	-6.5	2.51 H	263	14.6	32.9
3	*2412.00	106.3 PK			2.51 H	263	73.4	32.9
4	*2412.00	93.7 AV			2.51 H	263	60.8	32.9
5	4824.00	56.0 PK	74.0	-18.0	1.89 H	284	50.6	5.4
6	4824.00	41.9 AV	54.0	-12.1	1.89 H	284	36.5	5.4
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2390.00	67.4 PK	74.0	-6.6	2.68 V	198	34.5	32.9
2	2390.00	50.7 AV	54.0	-3.3	2.68 V	198	17.8	32.9
3	*2412.00	114.7 PK			2.68 V	198	81.8	32.9
4	*2412.00	101.9 AV			2.68 V	198	69.0	32.9
5	4824.00	55.5 PK	74.0	-18.5	2.53 V	172	50.1	5.4
6	4824.00	41.5 AV	54.0	-12.5	2.53 V	172	36.1	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.
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=200 Hz, DET=Peak
Input Power	120 Vac, 60 Hz	Environmental Conditions	23 °C, 68% RH
Tested By	Greg 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	*2437.00	111.2 PK			2.51 H	266	78.3	32.9
2	*2437.00	98.5 AV			2.51 H	266	65.6	32.9
3	4874.00	55.8 PK	74.0	-18.2	1.96 H	304	50.5	5.3
4	4874.00	41.8 AV	54.0	-12.2	1.96 H	304	36.5	5.3
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2437.00	119.3 PK			2.65 V	272	86.4	32.9
2	*2437.00	106.7 AV			2.65 V	272	73.8	32.9
3	4874.00	55.6 PK	74.0	-18.4	2.55 V	177	50.3	5.3
4	4874.00	41.5 AV	54.0	-12.5	2.55 V	177	36.2	5.3

Remarks:

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

RF Mode	802.11ax (HE20)	Channel	CH 11 : 2462 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=200 Hz, DET=Peak
Input Power	120 Vac, 60 Hz	Environmental Conditions	23 °C, 68% RH
Tested By	Greg 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	*2462.00	105.7 PK			2.51 H	264	72.8	32.9
2	*2462.00	93.2 AV			2.51 H	264	60.3	32.9
3	2483.50	60.7 PK	74.0	-13.3	2.51 H	264	27.8	32.9
4	2483.50	47.8 AV	54.0	-6.2	2.51 H	264	14.9	32.9
5	4924.00	55.1 PK	74.0	-18.9	1.87 H	298	49.8	5.3
6	4924.00	41.1 AV	54.0	-12.9	1.87 H	298	35.8	5.3
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2462.00	113.8 PK			2.54 V	199	80.9	32.9
2	*2462.00	101.4 AV			2.54 V	199	68.5	32.9
3	2483.50	64.0 PK	74.0	-10.0	2.54 V	199	31.1	32.9
4	2483.50	51.0 AV	54.0	-3.0	2.54 V	199	18.1	32.9
5	4924.00	54.6 PK	74.0	-19.4	2.61 V	178	49.3	5.3
6	4924.00	40.7 AV	54.0	-13.3	2.61 V	178	35.4	5.3

Remarks:

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

RF Mode	802.11ax (HE40)	Channel	CH 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=200 Hz, DET=Peak
Input Power	120 Vac, 60 Hz	Environmental Conditions	23 °C, 68% RH
Tested By	Greg 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	2390.00	61.2 PK	74.0	-12.8	2.55 H	270	28.3	32.9
2	2390.00	48.3 AV	54.0	-5.7	2.55 H	270	15.4	32.9
3	*2422.00	104.0 PK			2.55 H	270	71.1	32.9
4	*2422.00	91.4 AV			2.55 H	270	58.5	32.9
5	4844.00	52.7 PK	74.0	-21.3	1.95 H	296	47.3	5.4
6	4844.00	39.6 AV	54.0	-14.4	1.95 H	296	34.2	5.4
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2390.00	63.7 PK	74.0	-10.3	2.41 V	200	30.8	32.9
2	2390.00	50.6 AV	54.0	-3.4	2.41 V	200	17.7	32.9
3	*2422.00	112.3 PK			2.41 V	200	79.4	32.9
4	*2422.00	99.6 AV			2.41 V	200	66.7	32.9
5	4844.00	52.2 PK	74.0	-21.8	2.52 V	178	46.8	5.4
6	4844.00	39.0 AV	54.0	-15.0	2.52 V	178	33.6	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.
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=200 Hz, DET=Peak
Input Power	120 Vac, 60 Hz	Environmental Conditions	23 °C, 68% RH
Tested By	Greg 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	*2437.00	104.8 PK			2.58 H	261	71.9	32.9
2	*2437.00	92.3 AV			2.58 H	261	59.4	32.9
3	2483.50	61.2 PK	74.0	-12.8	2.58 H	261	28.3	32.9
4	2483.50	48.3 AV	54.0	-5.7	2.58 H	261	15.4	32.9
5	4874.00	52.8 PK	74.0	-21.2	2.06 H	297	47.5	5.3
6	4874.00	39.6 AV	54.0	-14.4	2.06 H	297	34.3	5.3
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2437.00	113.1 PK			2.46 V	199	80.2	32.9
2	*2437.00	100.5 AV			2.46 V	199	67.6	32.9
3	2483.50	65.3 PK	74.0	-8.7	2.46 V	199	32.4	32.9
4	2483.50	50.8 AV	54.0	-3.2	2.46 V	199	17.9	32.9
5	4874.00	52.2 PK	74.0	-21.8	2.53 V	169	46.9	5.3
6	4874.00	39.1 AV	54.0	-14.9	2.53 V	169	33.8	5.3

Remarks:

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

RF Mode	802.11ax (HE40)	Channel	CH 9 : 2452 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=200 Hz, DET=Peak
Input Power	120 Vac, 60 Hz	Environmental Conditions	23 °C, 68% RH
Tested By	Greg 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	*2452.00	99.4 PK			2.47 H	263	66.5	32.9
2	*2452.00	86.7 AV			2.47 H	263	53.8	32.9
3	2483.50	61.5 PK	74.0	-12.5	2.47 H	263	28.6	32.9
4	2483.50	48.3 AV	54.0	-5.7	2.47 H	263	15.4	32.9
5	4904.00	52.1 PK	74.0	-21.9	1.95 H	297	46.9	5.2
6	4904.00	39.0 AV	54.0	-15.0	1.95 H	297	33.8	5.2
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	107.3 PK			2.55 V	187	74.4	32.9
2	*2452.00	94.8 AV			2.55 V	187	61.9	32.9
3	2483.50	63.7 PK	74.0	-10.3	2.55 V	187	30.8	32.9
4	2483.50	50.9 AV	54.0	-3.1	2.55 V	187	18.0	32.9
5	4904.00	51.7 PK	74.0	-22.3	2.56 V	174	46.5	5.2
6	4904.00	38.6 AV	54.0	-15.4	2.56 V	174	33.4	5.2

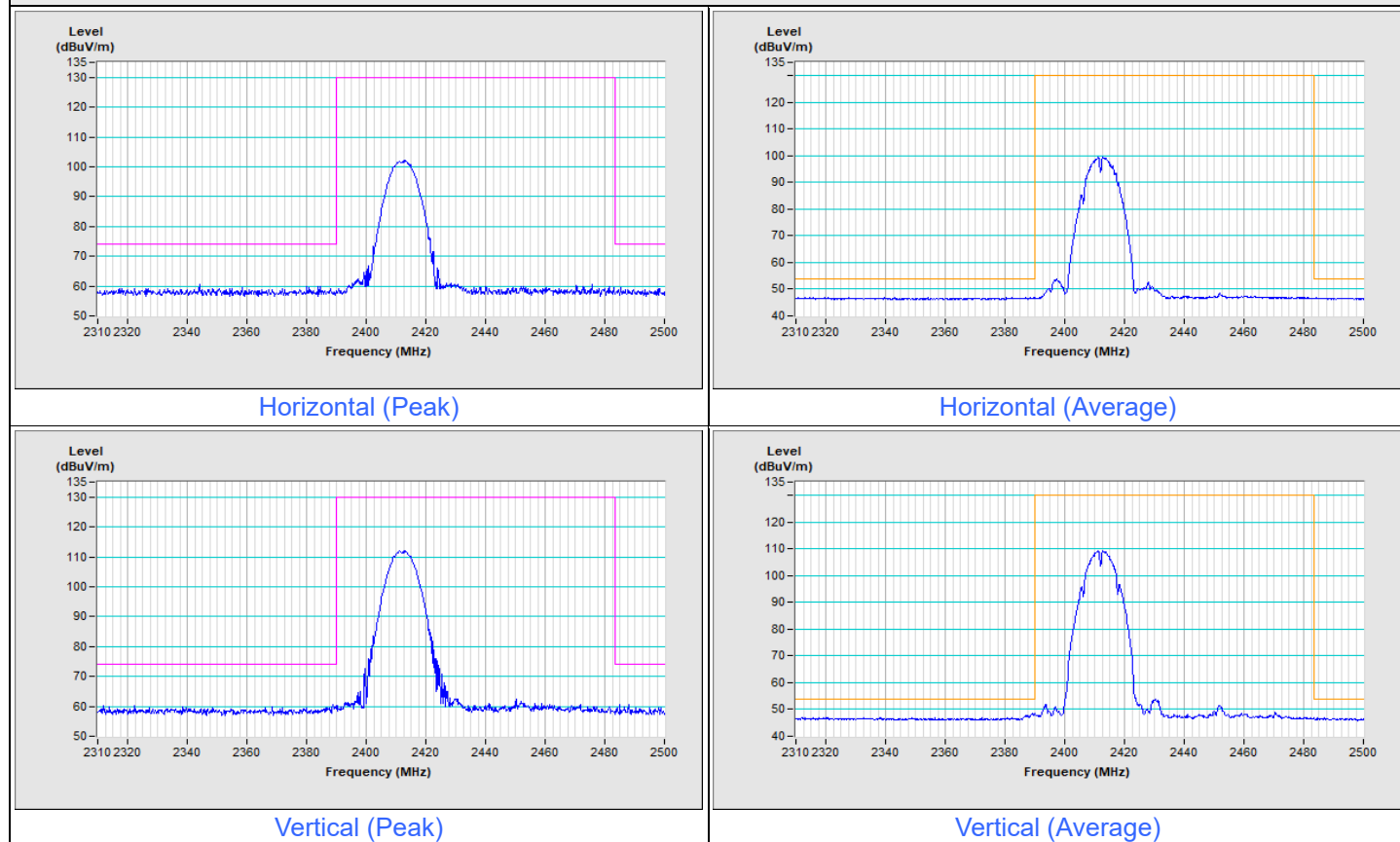
Remarks:

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.

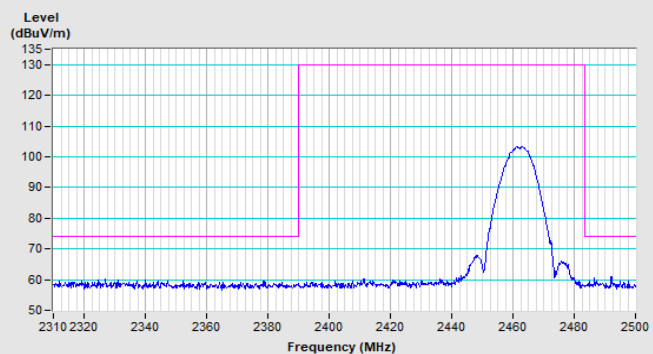
Plot of Band Edge

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=200 Hz, DET=Peak
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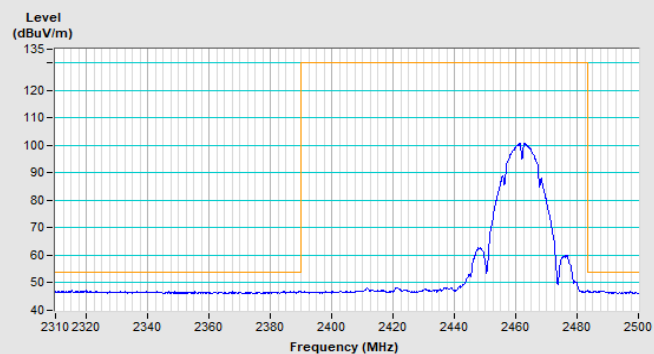
802.11b Channel 1



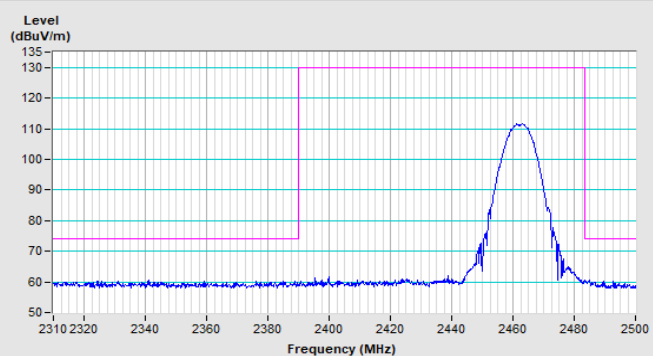
802.11b Channel 11



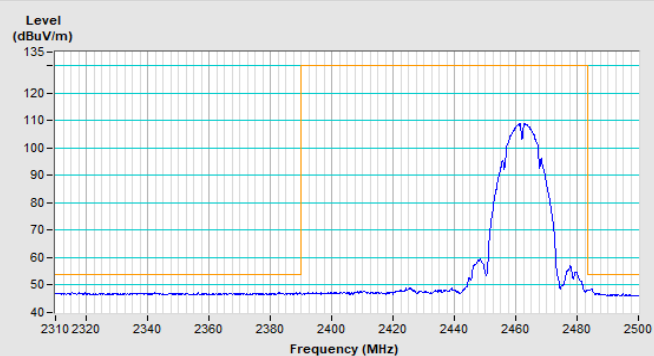
Horizontal (Peak)



Horizontal (Average)



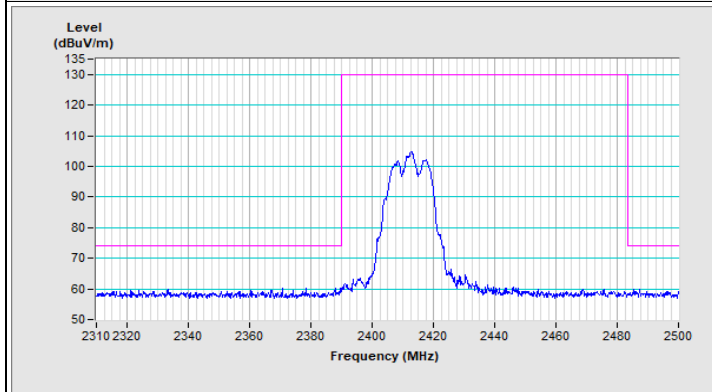
Vertical (Peak)



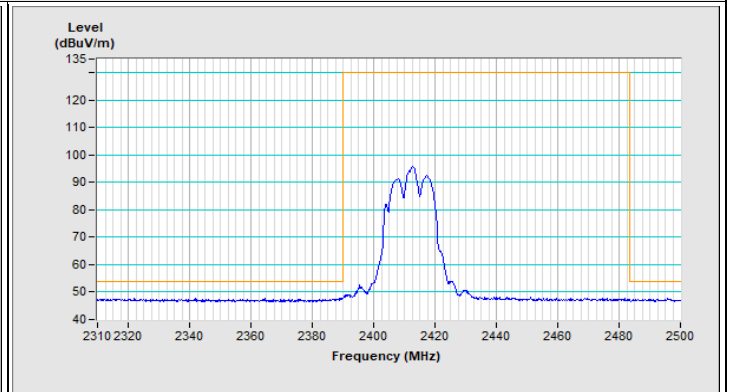
Vertical (Average)

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=1 kHz, DET=Peak
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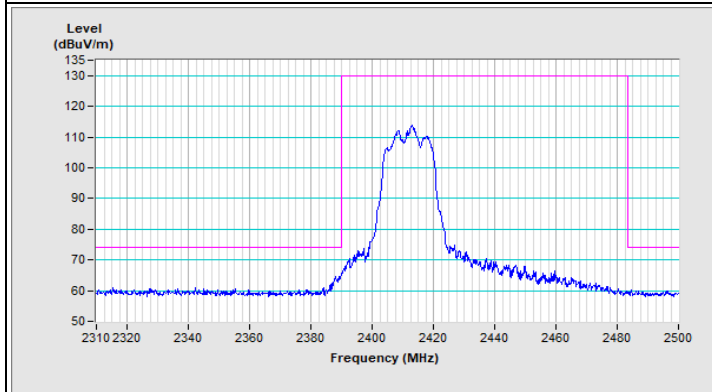
802.11g Channel 1



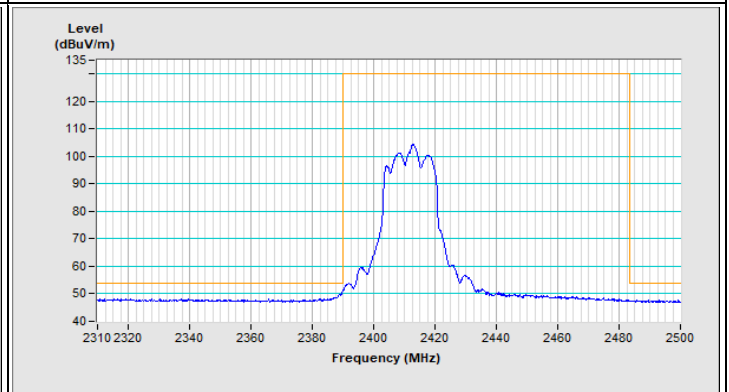
Horizontal (Peak)



Horizontal (Average)

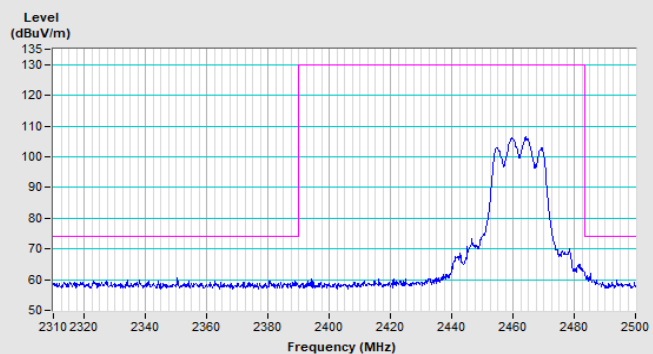


Vertical (Peak)

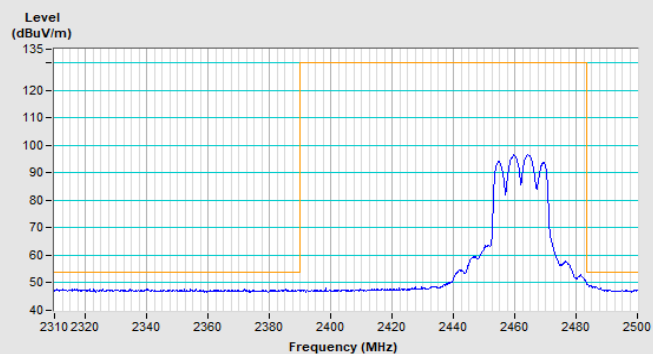


Vertical (Average)

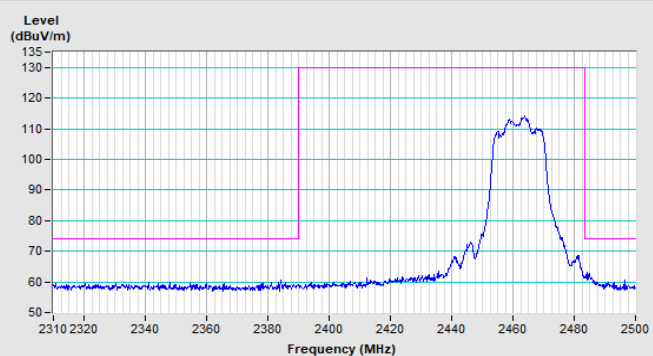
802.11g Channel 11



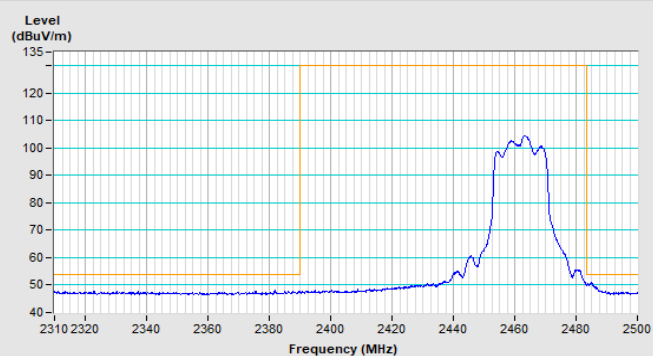
Horizontal (Peak)



Horizontal (Average)



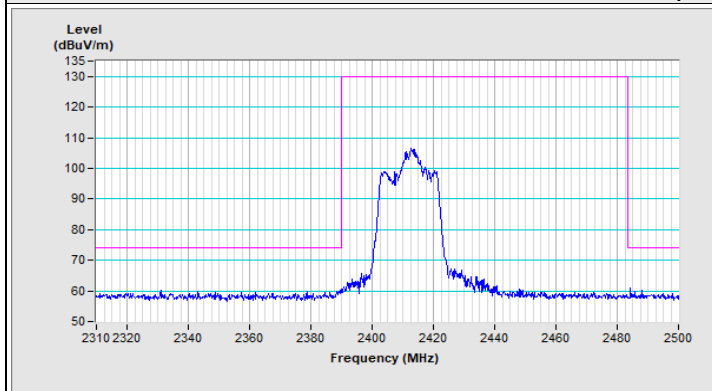
Vertical (Peak)



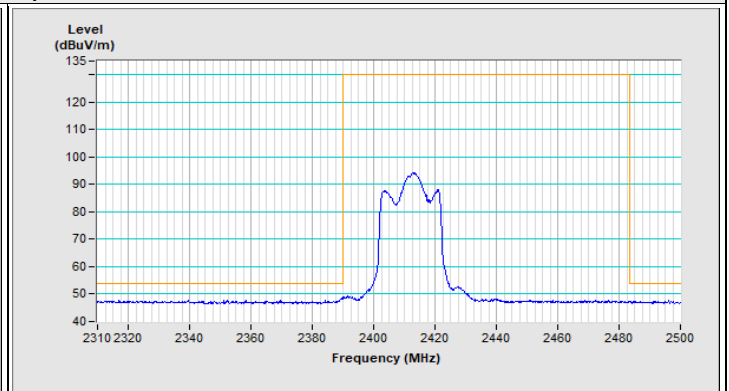
Vertical (Average)

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=200 Hz, DET=Peak
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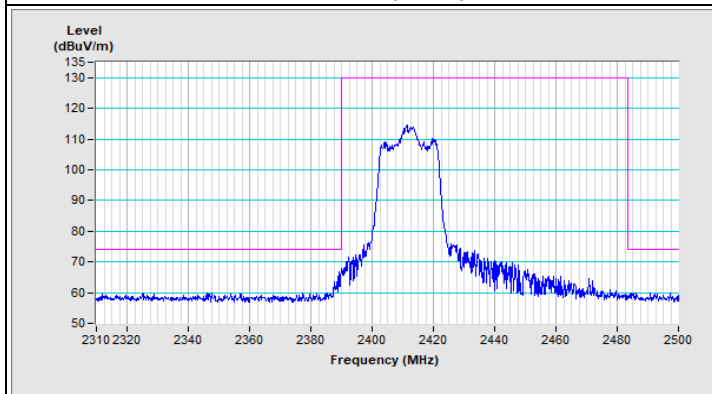
802.11ax (HE20) Channel 1



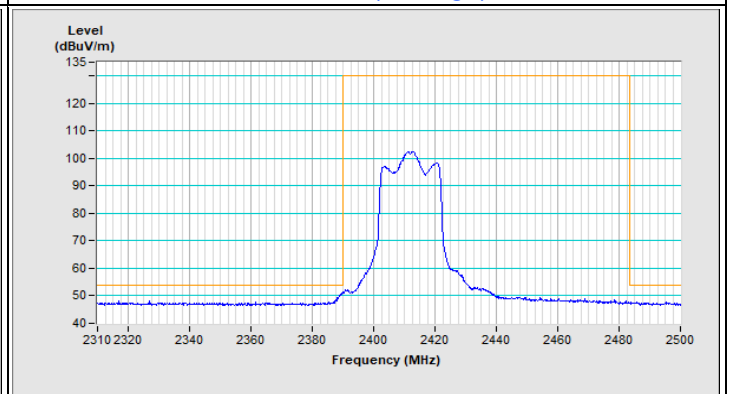
Horizontal (Peak)



Horizontal (Average)

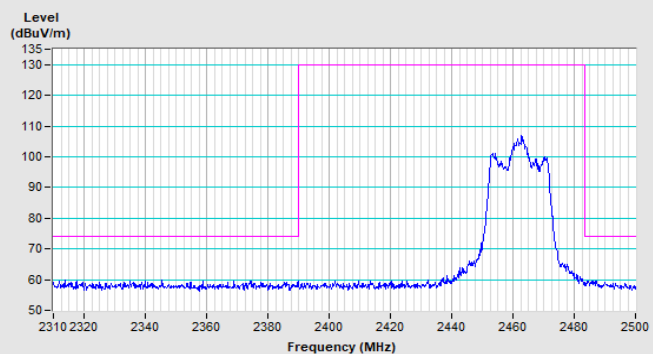


Vertical (Peak)

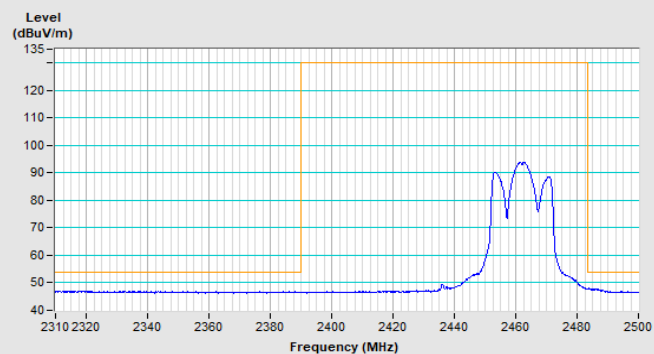


Vertical (Average)

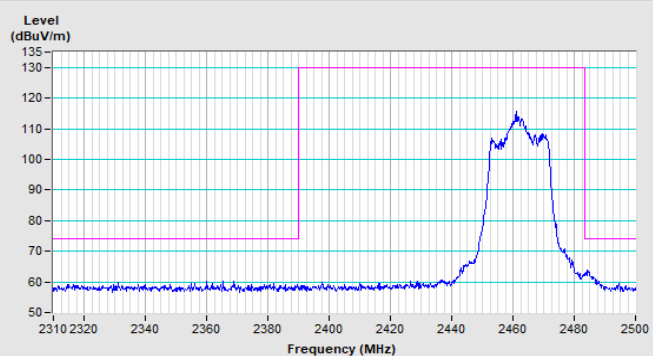
802.11ax (HE20) Channel 11



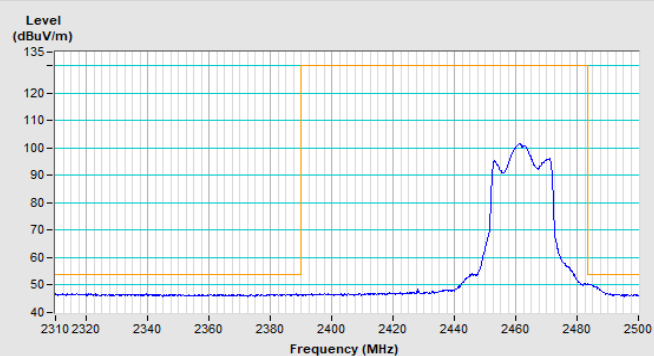
Horizontal (Peak)



Horizontal (Average)



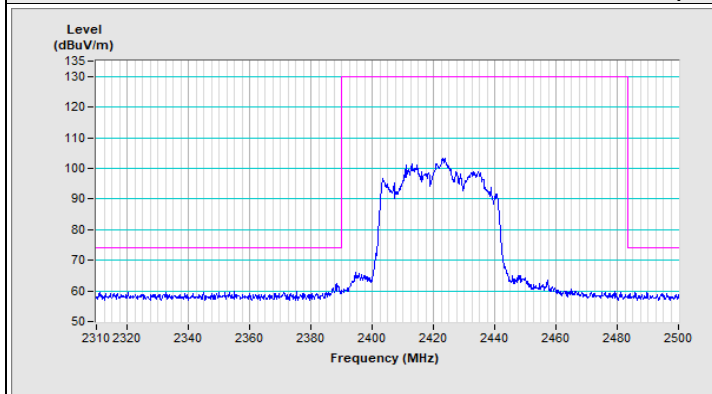
Vertical (Peak)



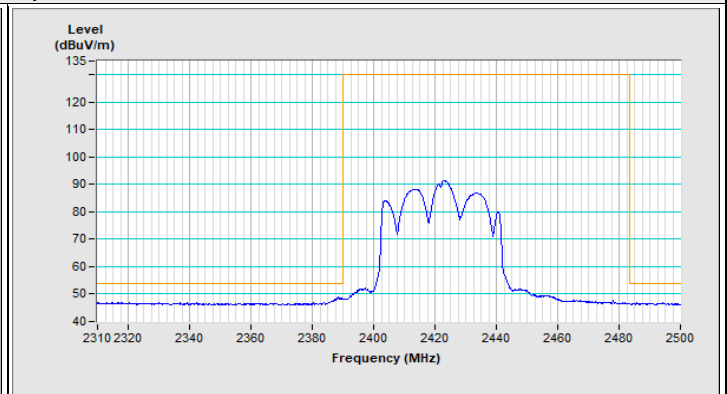
Vertical (Average)

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=200 Hz, DET=Peak
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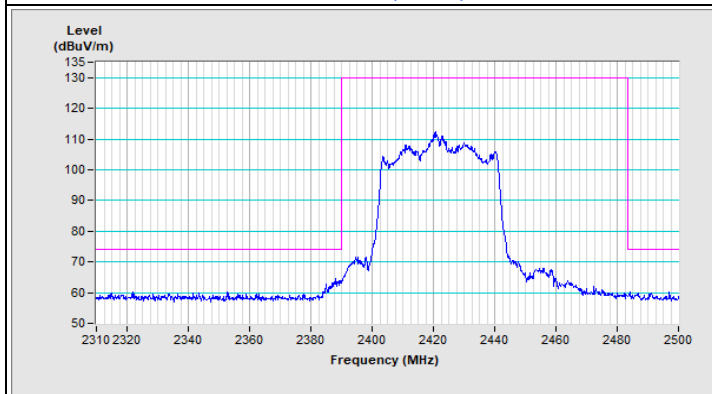
802.11ax (HE40) Channel 3



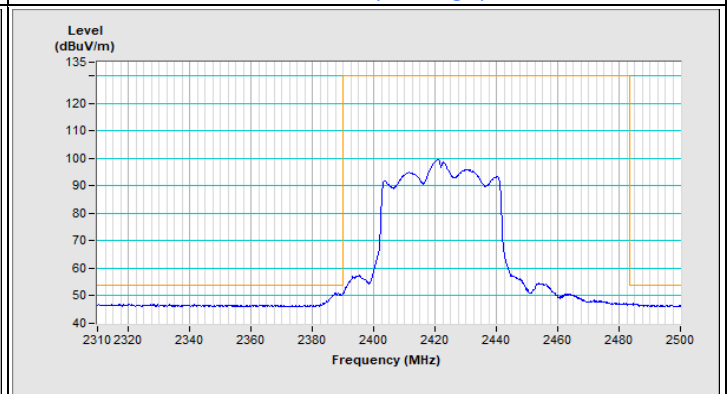
Horizontal (Peak)



Horizontal (Average)

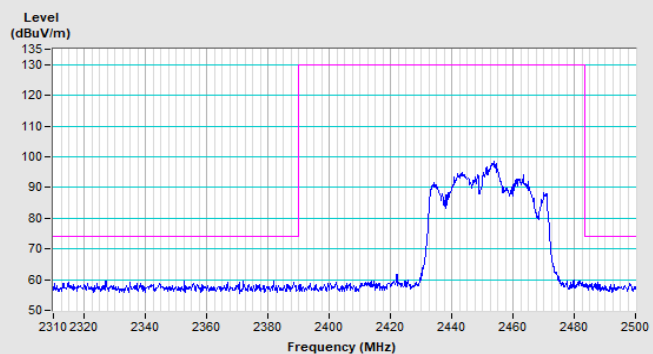


Vertical (Peak)

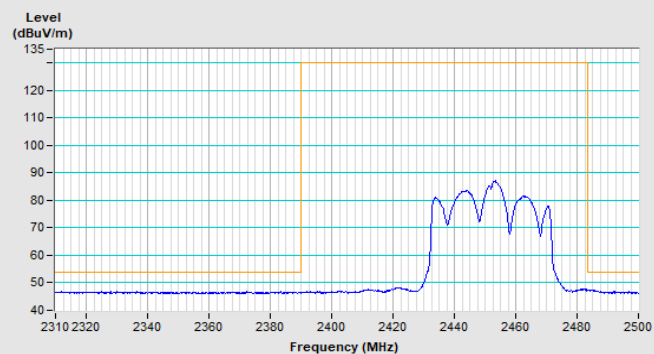


Vertical (Average)

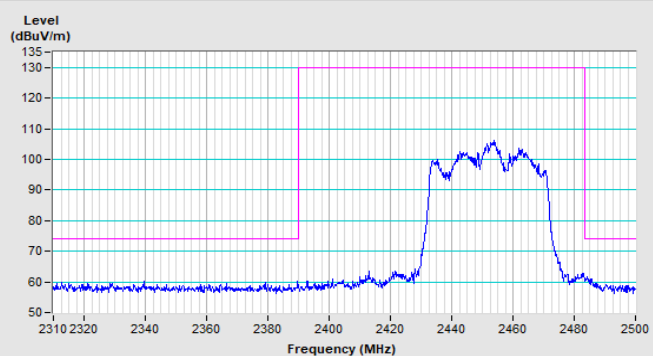
802.11ax (HE40) Channel 9



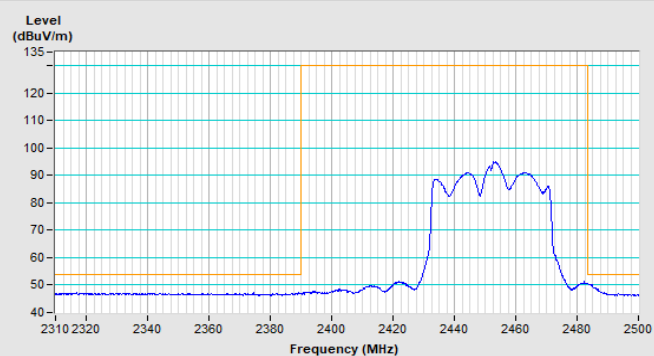
Horizontal (Peak)



Horizontal (Average)



Vertical (Peak)

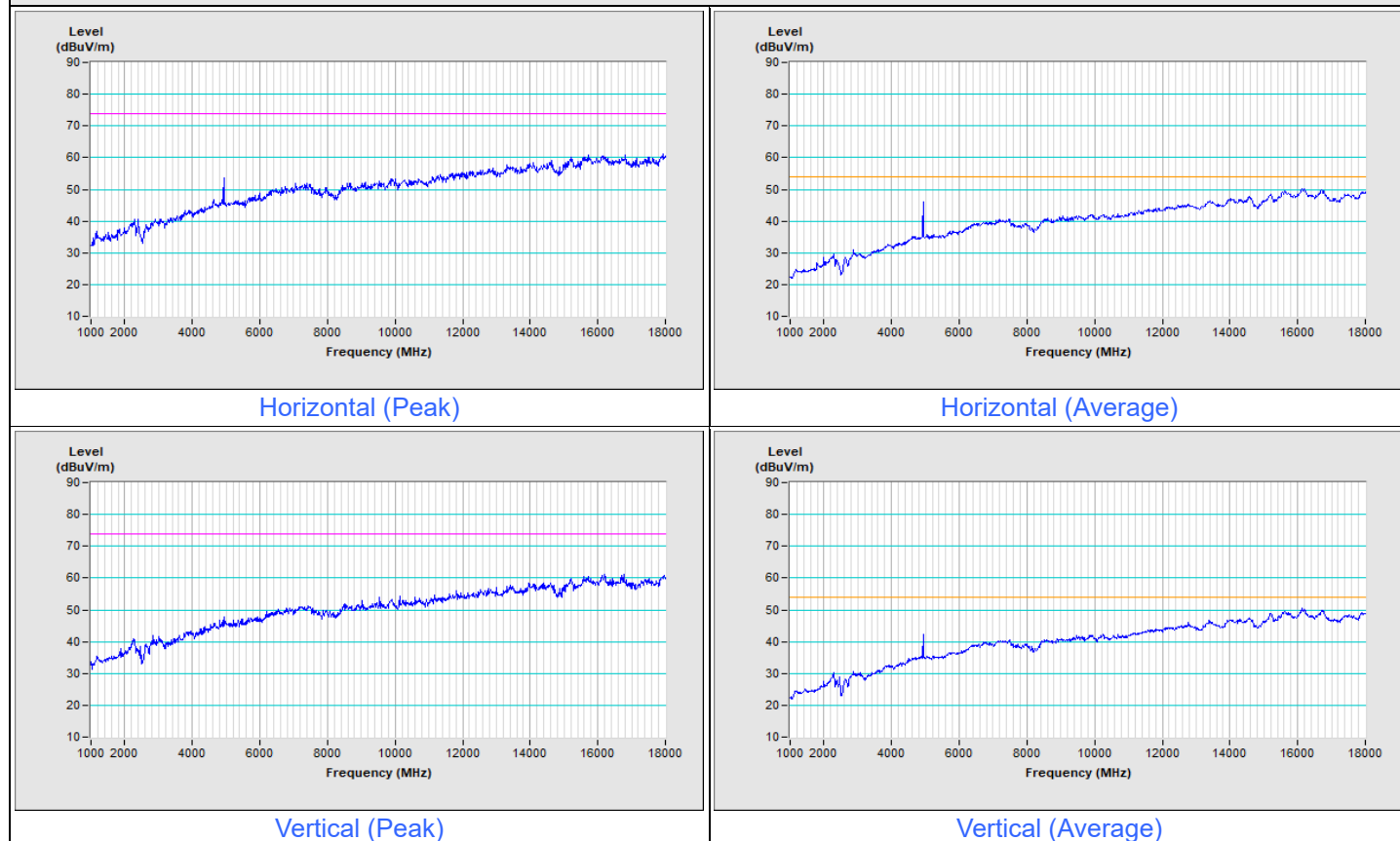


Vertical (Average)

Plot of Other Emission

Frequency Range	1 GHz ~ 18 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=200 Hz, DET=Peak
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802.11b Channel 6



Notes:

1. For radiated emission test data, complete spectral plots shall be presented in the report only for the worst-case scenarios of each mode within each operating frequency band.
2. The frequency range 18 GHz ~ 25 GHz: After investigation, no any emissions were found to exist, therefore they are not recorded in this report.

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.

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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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