FCC Test Report

Report No.: RF190311C07-2

FCC ID: A4RH2B

Model Name: H2B

Received Date: Mar. 20, 2019

Test Date: Mar. 28, 2019 ~ Apr. 13, 2019

Issued Date: Apr. 26, 2019

Applicant: Google LLC

Address: 1600 Amphitheatre Parkway, Mountain View, CA 94043, USA

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

Lab Address: No. 47-2, 14th Ling, Chia Pau Vil., Lin Kou Dist., New Taipei City, Taiwan (R.O.C)

Test Location: No.19, Hwa Ya 2nd Rd., Wen Hwa Vil., Kwei Shan Dist., Taoyuan City 33383, Taiwan, R.O.C.

FCC Registration / Designation Number: 788550 / TW0003

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Release Control Record

Issue No.	Description	Date Issued
RF190311C07-2	Original Release	Apr. 26, 2019

1 Certificate of Conformity

Product: Media Device

Model Name: H2B

Sample Status: Engineering Sample

Applicant: Google LLC

Test Date: Mar. 28, 2019 ~ Apr. 13, 2019

Standards: 47 CFR FCC Part 15, Subpart C (Section 15.247)
ANSI C63.10:2013

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.

Prepared by : _____ , **Date:** Apr. 26, 2019
Gina Liu / Specialist

Approved by : _____ , **Date:** Apr. 26, 2019
Dylan Chiou / Project Engineer

2 Summary of Test Results

47 CFR FCC Part 15, Subpart C (Section 15.247)			
FCC Clause	**Test Item**	**Result**	**Remarks**
15.207	AC Power Conducted Emission	Pass	Meet the requirement of limit. Minimum passing margin is -29.11 dB at 0.52200 MHz.
15.205 / 15.209 / 15.247(d)	Radiated Emissions and Band Edge Measurement	Pass	Meet the requirement of limit. Minimum passing margin is -1.51 dB at 2389.94 MHz, 2483.64 MHz.
15.247(d)	Antenna Port Emission	Pass	Meet the requirement of limit.
15.247(a)(2)	6 dB Bandwidth	Pass	Meet the requirement of limit.
---	Occupied Bandwidth Measurement	Pass	Reference only
15.247(a)(1)	Conducted power	Pass	Meet the requirement of limit.
15.247(e)	Power Spectral Density	Pass	Meet the requirement of limit.
15.203	Antenna Requirement	Pass	Antenna connector is mini murata 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	Frequency	Expended Uncertainty (k=2) (±)
Conducted Emissions at mains ports	150 kHz ~ 30 MHz	2.44 dB
Radiated Emissions up to 1 GHz	9 kHz ~ 30 MHz	3.04 dB
	30 MHz ~ 200 MHz	2.93 dB
	200 MHz ~ 1000 MHz	2.95 dB
Radiated Emissions above 1 GHz	1 GHz ~ 18 GHz	2.26 dB
	18 GHz ~ 40 GHz	1.94 dB

2.2 Modification Record

There were no modifications required for compliance.

3 General Information

3.1 General Description of EUT

Product	Media Device
Model Name	H2B
Status of EUT	Engineering Sample
Power Supply Rating	3.8 Vdc (Li-ion battery)
Modulation Type	CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM
Modulation Technology	DSSS, OFDM
Transfer Rate	802.11b: 11.0 / 5.5 / 2.0 / 1.0 Mbps 802.11g: 54.0 / 48.0 / 36.0 / 24.0 / 18.0 / 12.0 / 9.0 / 6.0 Mbps 802.11n: up to 72.2 Mbps
Operating Frequency	2412 ~ 2472 MHz
Number of Channel	13 for 802.11b, 802.11g, 802.11n (HT20)
Output Power	102.565 mW
Antenna Type	Loop / Stamped metal antenna with 3.83 dBi gain
Antenna Connector	mini murata
Accessory Device	Refer to Note as below
Data Cable Supplied	Refer to Note as below
HW Version	EVT
SW Version	003.006.006.0049.0121

Note:

1. The EUT provides one completed transmitter and one receiver.

Modulation Mode	TX Function
802.11b	1TX (SISO)
802.11g	1TX (SISO)
802.11n (HT20)	1TX (SISO)

2. The EUT's accessories list refers to Ext. Pho.
3. 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 Description of Test Modes

13 channels are provided for 802.11b, 802.11g and 802.11n (HT20):

Channel	Frequency (MHz)	Channel	Frequency (MHz)
1	2412	8	2447
2	2417	9	2452
3	2422	10	2457
4	2427	11	2462
5	2432	12	2467
6	2437	13	2472
7	2442		

3.2.1 Test Mode Applicability and Tested Channel Detail

EUT Configure Mode	Applicable To				Description
	RE≥1G	RE<1G	PLC	APCM	
-	√	√	√	√	-

Where **RE≥1G:** Radiated Emission above 1 GHz **RE<1G:** Radiated Emission below 1 GHz
PLC: Power Line Conducted Emission **APCM:** Antenna Port Conducted Measurement

NOTE: The EUT had been pre-tested on the positioned of each 3 axis. The worst case was found when positioned on **Z-plane**.
NOTE: "-"means no effect.

Radiated Emission Test (Above 1 GHz):

☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).
☒ Following channel(s) was (were) selected for the final test as listed below.

EUT Configure Mode	Mode	Available Channel	Tested Channel	Modulation Technology	Modulation Type	Data Rate (Mbps)
-	802.11b	1 to 13	1, 6, 11, 12, 13	DSSS	DBPSK	1.0
-	802.11g	1 to 13	1~13	OFDM	BPSK	6.0
-	802.11n (HT20)	1 to 13	1~13	OFDM	BPSK	6.5

Radiated Emission Test (Below 1 GHz):

☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).
☒ Following channel(s) was (were) selected for the final test as listed below.

EUT Configure Mode	Mode	Available Channel	Tested Channel	Modulation Technology	Modulation Type	Data Rate (Mbps)
-	802.11g	1 to 13	1	OFDM	BPSK	6.0

Power Line Conducted Emission Test:

☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).
☒ Following channel(s) was (were) selected for the final test as listed below.

EUT Configure Mode	Mode	Available Channel	Tested Channel	Modulation Technology	Modulation Type	Data Rate (Mbps)
-	802.11g	1 to 13	1	OFDM	BPSK	6.5

Bandedge Measurement:

☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).
☒ Following channel(s) was (were) selected for the final test as listed below.

EUT Configure Mode	Mode	Available Channel	Tested Channel	Modulation Technology	Modulation Type	Data Rate (Mbps)
-	802.11b	1 to 13	1, 11, 12, 13	DSSS	DBPSK	1.0
-	802.11g	1 to 13	1, 11, 12, 13	OFDM	BPSK	6.0
-	802.11n (HT20)	1 to 13	1, 11, 12, 13	OFDM	BPSK	6.5

Antenna Port Conducted Measurement:

☒ This item includes all test value of each mode, but only includes spectrum plot of worst value of each mode.
☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).
☒ Following channel(s) was (were) selected for the final test as listed below.

EUT Configure Mode	Mode	Available Channel	Tested Channel	Modulation Technology	Modulation Type	Data Rate (Mbps)
-	802.11b	1 to 13	1, 6, 11, 12, 13	DSSS	DBPSK	1.0
-	802.11g	1 to 13	1, 6, 11, 12, 13	OFDM	BPSK	6.0
-	802.11n (HT20)	1 to 13	1, 6, 11, 12, 13	OFDM	BPSK	6.5

Test Condition:

Applicable To	Environmental Conditions	Input Power	Tested by
RE≥1G	25 deg. C, 65 % RH	120 Vac, 60 Hz	Thomas Wei, Tim Chen
RE<1G	25 deg. C, 65 % RH	120 Vac, 60 Hz	Thomas Wei
PLC	25 deg. C, 65 % RH	120 Vac, 60 Hz	Jisyong Wang
APCM	25 deg. C, 65 % RH	3.8 Vdc	Vincent Huang

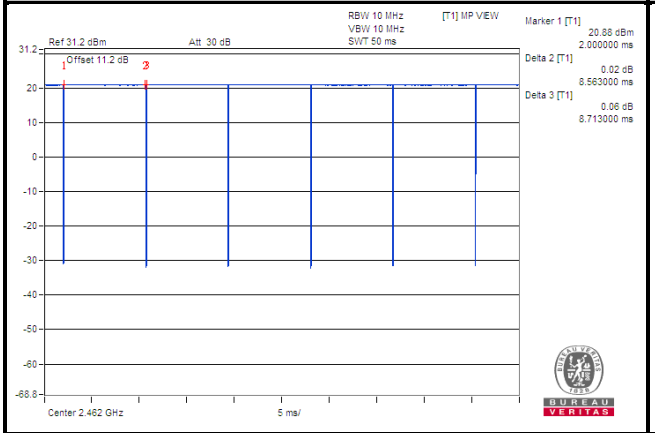
3.3 Duty Cycle of Test Signal

802.11b: Duty cycle of test signal is ≥ 98 %, duty factor is not required.

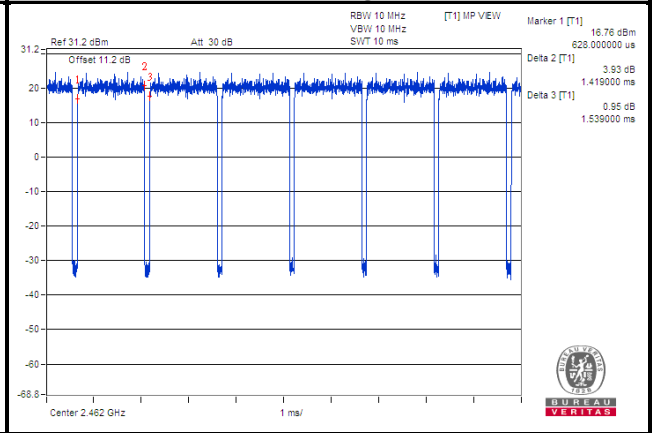
802.11g: Duty cycle = 1.419/1.539 = 0.922, Duty factor = 10 * log(1/0.922) = 0.35

802.11n (HT20): Duty cycle = 1.33/1.437 = 0.926, Duty factor = 10 * log(1/0.926) = 0.34

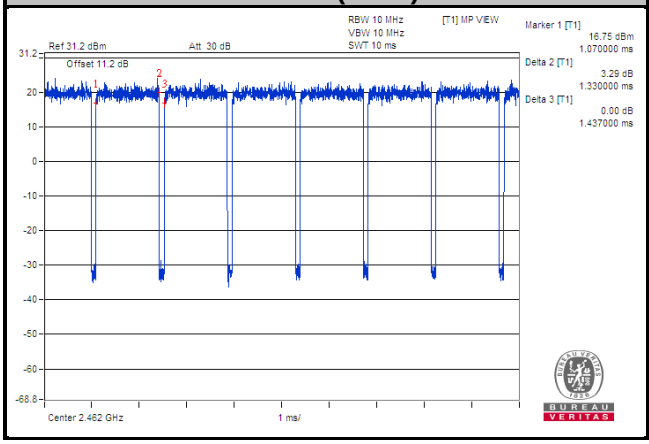
802.11b



802.11g



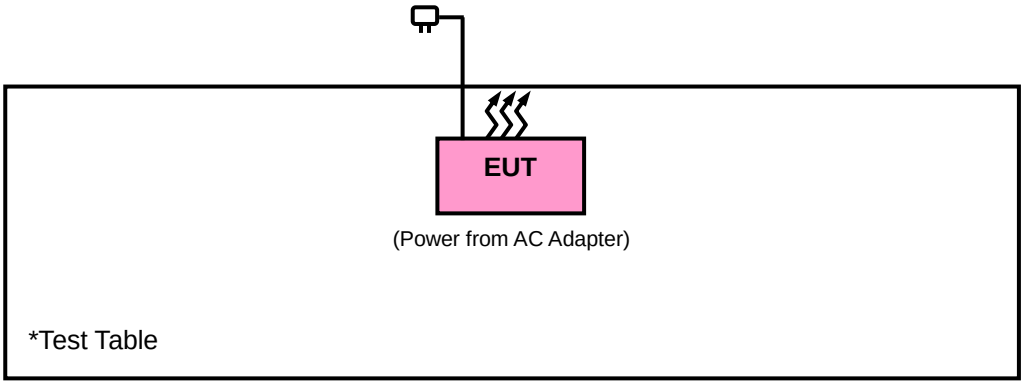
802.11n (HT20)



3.4 Description of Support Units

The EUT has been tested as an independent unit.

3.4.1 Configuration of System under Test



3.5 General Description of Applied Standards

The EUT is a RF Product. According to the specifications of the manufacturer, it must comply with the requirements of the following standards:

FCC Part 15, Subpart C (15.247)
KDB 558074 D01 15.247 Meas Guidance v05r02

ANSI C63.10-2013

All test items have been performed and recorded as per the above standards.

4 Test Types and Results

4.1 Radiated Emission and Bandedge Measurement

4.1.1 Limits of Radiated Emission and Bandedge Measurement

Radiated emissions 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

NOTE:

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.

4.1.2 Test Instruments

Description & Manufacturer	Model No.	Serial No.	Date of Calibration	Due Date of Calibration
Test Receiver Agilent	N9038A	MY51210203	Mar. 18, 2019	Mar. 17, 2020
Spectrum Analyzer Agilent	N9010A	MY52220314	Dec. 13, 2018	Dec. 12, 2019
Spectrum Analyzer ROHDE & SCHWARZ	FSU43	100115	Jan. 21, 2019	Jan. 20, 2020
BILOG Antenna SCHWARZBECK	VULB 9168	9168-472	Nov. 23, 2018	Nov. 22, 2019
Horn Antenna SCHWARZBECK	BBHA 9120D	9120D-969	Nov. 25, 2018	Nov. 24, 2019
HORN Antenna SCHWARZBECK	BBHA 9170	9170-480	Nov. 25, 2018	Nov. 24, 2019
Loop Antenna	HLA 6121	45745	Jun. 14, 2018	May 18, 2019
Preamplifier EMCI	EMC 012645	980115	Oct. 12, 2018	Oct. 11, 2019
Preamplifier EMCI	EMC 184045	980116	Oct. 12, 2018	Oct. 11, 2019
Preamplifier EMCI	EMC 330H	980112	Oct. 12, 2018	Oct. 11, 2019
Preamplifier EMCI	EMC001340	980201	Oct. 12, 2018	Oct. 11, 2019
RF Coaxial Cable HUBER+SUHNNER	EMC104-SM-SM-8000&3000	140811+170717	Oct. 12, 2018	Oct. 11, 2019
Power Meter Anritsu	ML2495A	1012010	Sep. 05, 2018	Sep. 04, 2019
Power Sensor Anritsu	MA2411B	1315050	Sep. 04, 2018	Sep. 03, 2019
RF Coaxial Cable HUBER+SUHNNER	SUCOFLEX 104	EMC104-SM-SM-1000(140807)	Oct. 12, 2018	Oct. 11, 2019
RF Coaxial Cable WOKEN	8D-FB	Cable-Ch10-01	Oct. 12, 2018	Oct. 11, 2019
Software BV ADT	E3 6.120103	NA	NA	NA
Antenna Tower MF	MFA-440H	NA	NA	NA
Turn Table MF	MFT-201SS	NA	NA	NA
Antenna Tower &Turn Table Controller MF	MF-7802	NA	NA	NA

Note:
1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in HwaYa Chamber 10.
3. The horn antenna and preamplifier (model: EMC 184045) are used only for the measurement of emission frequency above 1 GHz if tested.
4. The IC Site Registration No. is 7450F-10.

4.1.3 Test Procedures

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 a 3 meter chamber room. 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.

Note:

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 9 kHz at frequency below 30 MHz.

For Radiated Emission above 30 MHz

a. The EUT was placed on the top of a rotating table 0.8 meters (for 30 MHz ~ 1 GHz) / 1.5 meters (for above 1 GHz) 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.
f. The test-receiver system was set to peak and average detected 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.

Note:

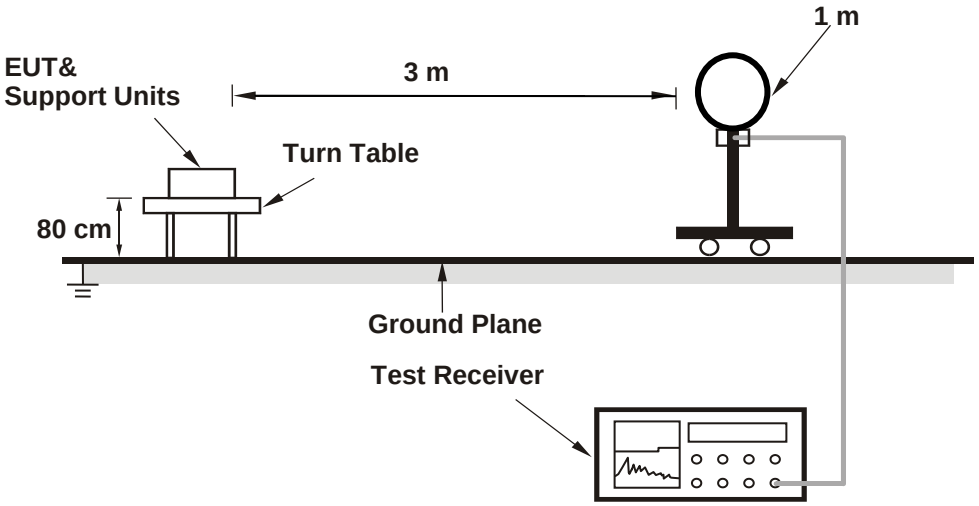
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120 kHz for Quasi-peak detection (QP) or Peak detection (PK) at frequency below 1 GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1 GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is ≥ 1/T (Duty cycle < 98 %) or 10 Hz (Duty cycle ≥ 98 %) for Average detection (AV) at frequency above 1 GHz.
   (11b: RBW = 1 MHz, VBW =300 Hz ; 11g: RBW = 1 MHz, VBW = 1 kHz ;
   11n (HT20): RBW = 1 MHz, VBW = 1 kHz)
4. All modes of operation were investigated and the worst-case emissions are reported.

4.1.4 Deviation from Test Standard

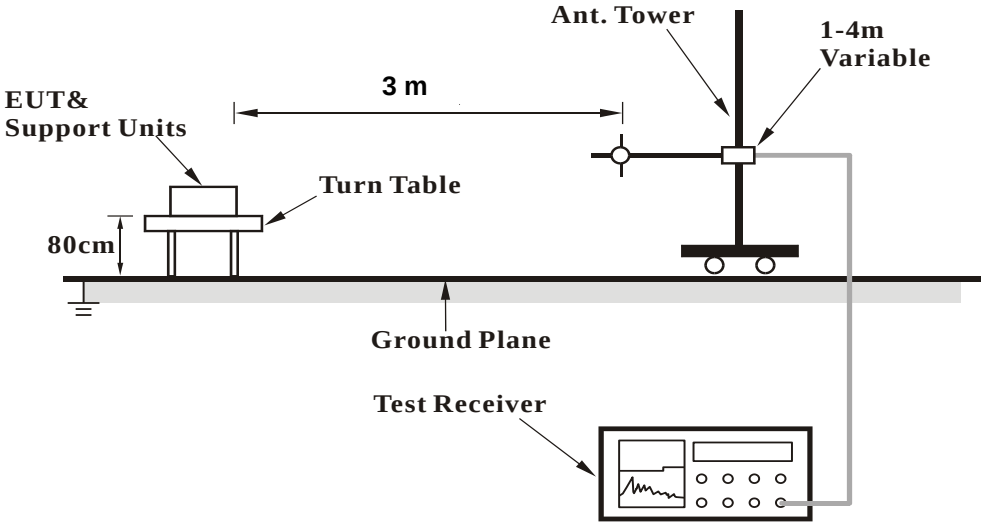
No deviation.

4.1.5 Test Set Up

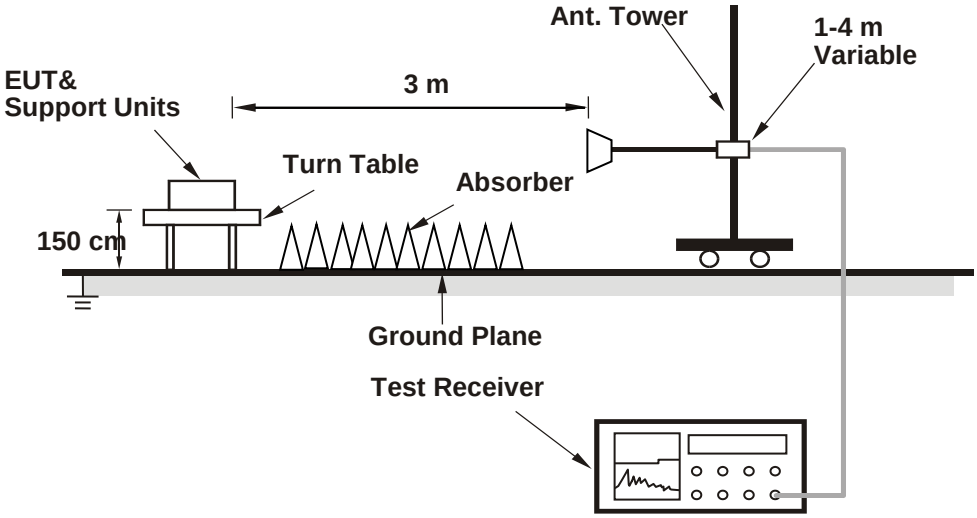
<Radiated Emission below 30 MHz>



<Radiated Emission 30 MHz to 1 GHz>



<Radiated Emission above 1 GHz>



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

4.1.6 EUT Operating Conditions

a. Placed the EUT on a testing table.
b. Use the software to control the EUT under transmission condition continuously at specific channel frequency.

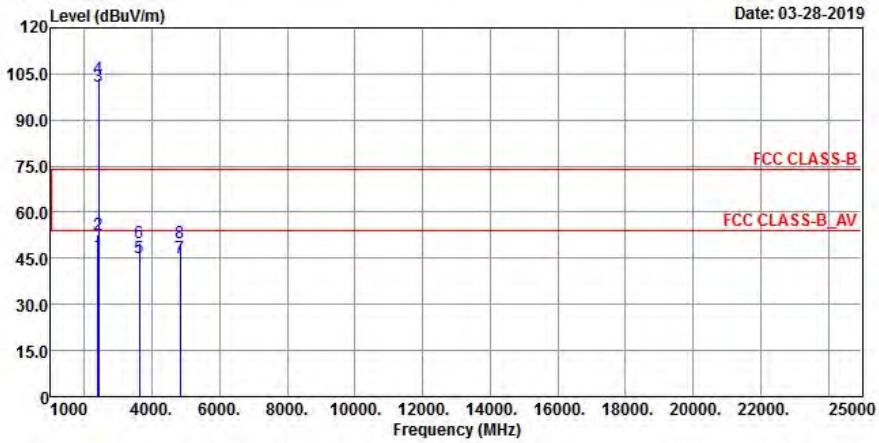
4.1.7 Test Results

Above 1 GHz Data：

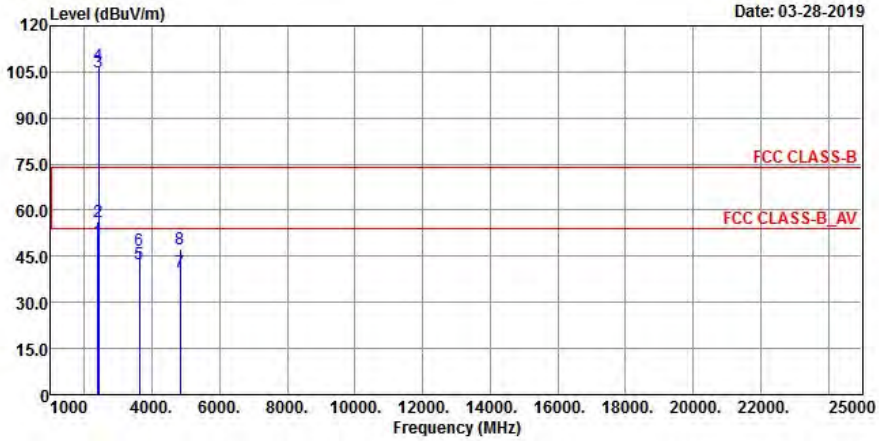
802.11b

EUT Test Condition		Measurement Detail	
Channel	Channel 1	**Frequency Range**	1 GHz ~ 25 GHz
Input Power	120 Vac, 60 Hz	**Detector Function**	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	**Tested By**	Thomas Wei

Horizontal



Vertical



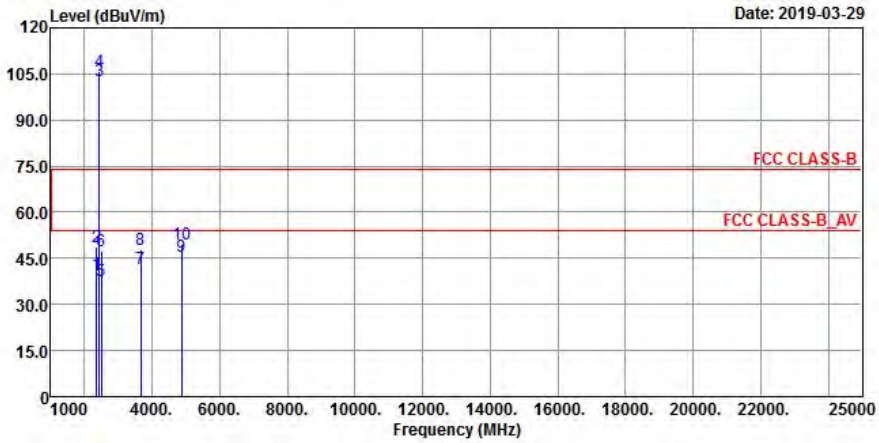
Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
2389.94	46.26	51.26	-5	54	-7.74	120	210	Average
2389.94	52.63	57.63	-5	74	-21.37	120	210	Peak
2412	100.99	106	-5.01			120	210	Average
2412	103.54	108.55	-5.01			120	210	Peak
3615	45.12	63.25	-18.13	54	-8.88	184	191	Average
3615	49.87	68	-18.13	74	-24.13	184	191	Peak
4824	45.27	59.65	-14.38	54	-8.73	127	239	Average
4824	50.13	64.51	-14.38	74	-23.87	127	239	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
2389.94	50.13	55.13	-5	54	-3.87	142	95	Average
2389.94	56.22	61.22	-5	74	-17.78	142	95	Peak
2412	104.74	109.75	-5.01			142	95	Average
2412	107.33	112.34	-5.01			142	95	Peak
3615	42.59	60.72	-18.13	54	-11.41	152	193	Average
3615	47.09	65.22	-18.13	74	-26.91	152	193	Peak
4824	39.85	54.23	-14.38	54	-14.15	125	297	Average
4824	47.29	61.67	-14.38	74	-26.71	125	297	Peak

Remarks:

1. Emission Level = Read Level + Factor
   Margin value = Emission level – Limit value
2. 2412 MHz: Fundamental frequency.
3. The emission levels of other frequencies were very low against the limit.

EUT Test Condition		Measurement Detail	
Channel	Channel 6	**Frequency Range**	1 GHz ~ 25 GHz
Input Power	120 Vac, 60 Hz	**Detector Function**	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	**Tested By**	Tim Chen

Horizontal



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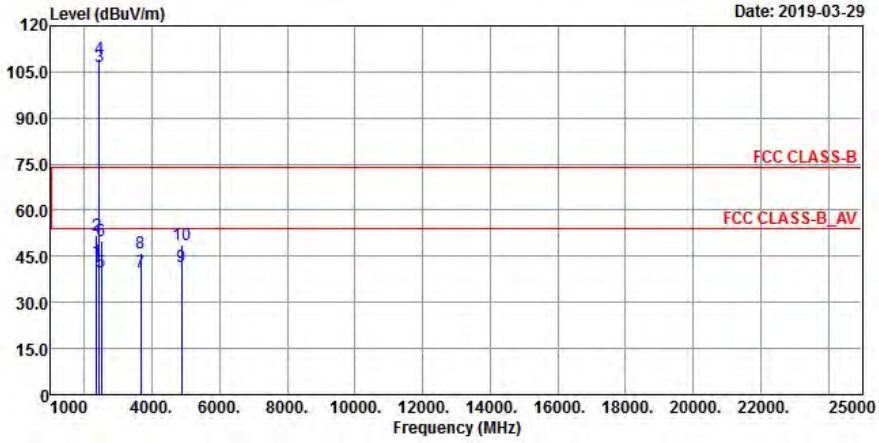


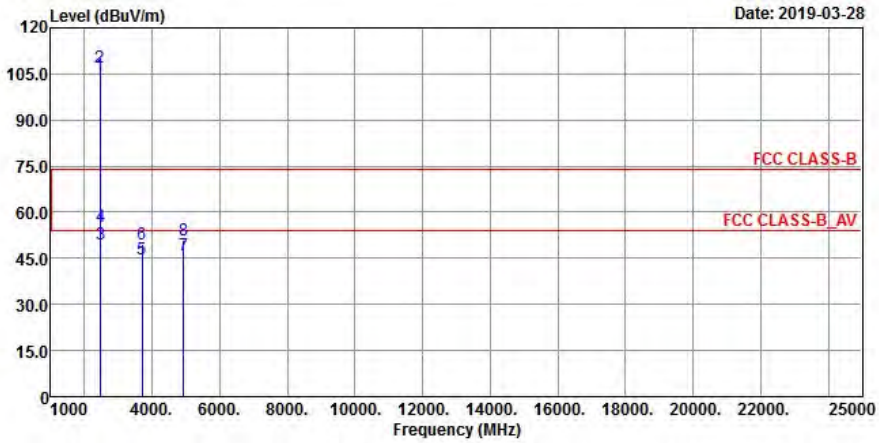
Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2360.68	39.67	44.48	-4.81	54	-14.33	171	214	Average
2360.68	48.71	53.52	-4.81	74	-25.29	171	214	Peak
2437	102.94	107.92	-4.98			171	214	Average
2437	105.73	110.71	-4.98			171	214	Peak
2493.44	37.7	42.48	-4.78	54	-16.3	171	214	Average
2493.44	47.42	52.2	-4.78	74	-26.58	171	214	Peak
3655.5	41.59	59.63	-18.04	54	-12.41	120	163	Average
3655.5	47.98	66.02	-18.04	74	-26.02	120	163	Peak
4874	45.83	59.91	-14.08	54	-8.17	120	228	Average
4874	49.62	63.7	-14.08	74	-24.38	120	228	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2360.68	43.2	48.01	-4.81	54	-10.8	137	48	Average
2360.68	51.91	56.72	-4.81	74	-22.09	137	48	Peak
2437	106.59	111.57	-4.98			137	48	Average
2437	109.17	114.15	-4.98			137	48	Peak
2485.6	40.05	44.9	-4.85	54	-13.95	137	48	Average
2485.6	49.96	54.81	-4.85	74	-24.04	137	48	Peak
3655.5	39.74	57.78	-18.04	54	-14.26	152	181	Average
3655.5	46.25	64.29	-18.04	74	-27.75	152	181	Peak
4874	41.55	55.63	-14.08	54	-12.45	123	297	Average
4874	48.5	62.58	-14.08	74	-25.5	123	297	Peak

Remarks:

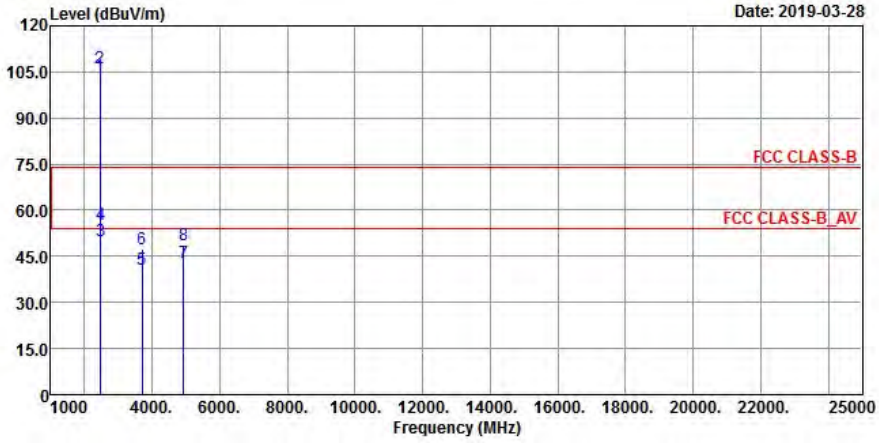
1. Emission Level = Read Level + Factor
   Margin value = Emission level – Limit value
2. 2437 MHz: Fundamental frequency.
3. The emission levels of other frequencies were very low against the limit.

EUT Test Condition		Measurement Detail	
Channel	Channel 11	**Frequency Range**	1 GHz ~ 25 GHz
Input Power	120 Vac, 60 Hz	**Detector Function**	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	**Tested By**	Tim Chen

Horizontal



Vertical



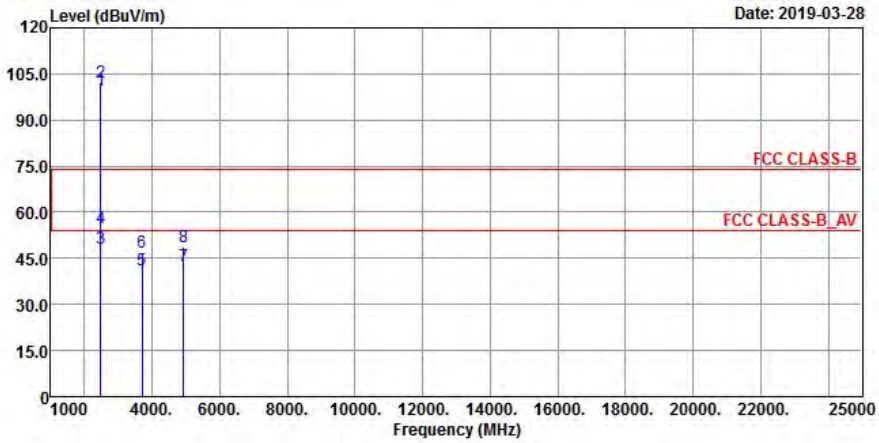
Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
2462	104.48	109.39	-4.91			260	300	Average
2462	107	111.91	-4.91			260	300	Peak
2483.52	49.79	54.64	-4.85	54	-4.21	260	300	Average
2483.52	55.34	60.19	-4.85	74	-18.66	260	300	Peak
3691.2	44.61	62.55	-17.94	54	-9.39	236	312	Average
3691.2	49.49	67.43	-17.94	74	-24.51	236	312	Peak
4924	46.1	60.06	-13.96	54	-7.9	204	348	Average
4924	50.86	64.82	-13.96	74	-23.14	204	348	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
2462	103.84	108.75	-4.91			184	91	Average
2462	106.3	111.21	-4.91			184	91	Peak
2483.52	50.09	54.94	-4.85	54	-3.91	184	91	Average
2483.52	55.47	60.32	-4.85	74	-18.53	184	91	Peak
3692.17	40.75	58.69	-17.94	54	-13.25	120	210	Average
3692.17	47.22	65.16	-17.94	74	-26.78	120	210	Peak
4924	43.08	57.04	-13.96	54	-10.92	228	143	Average
4924	48.66	62.62	-13.96	74	-25.34	228	143	Peak

Remarks:

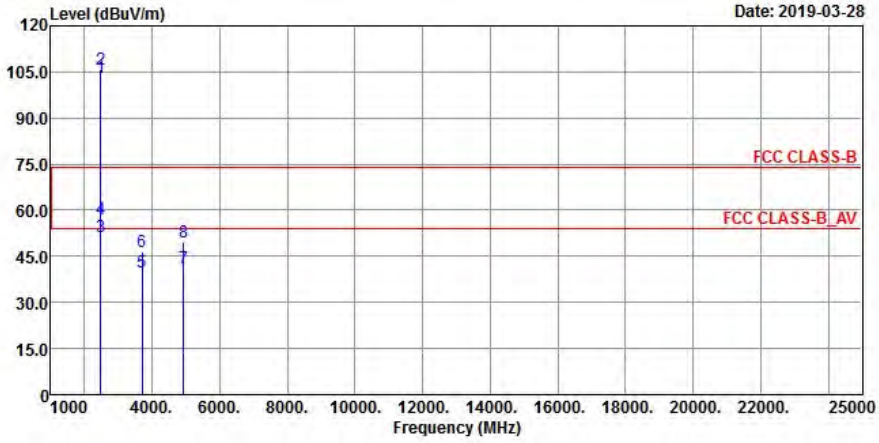
1. Emission Level = Read Level + Factor
   Margin value = Emission level – Limit value
2. 2462 MHz: Fundamental frequency.
3. The emission levels of other frequencies were very low against the limit.

EUT Test Condition		Measurement Detail	
Channel	Channel 12	**Frequency Range**	1 GHz ~ 25 GHz
Input Power	120 Vac, 60 Hz	**Detector Function**	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	**Tested By**	Tim Chen

Horizontal



Vertical



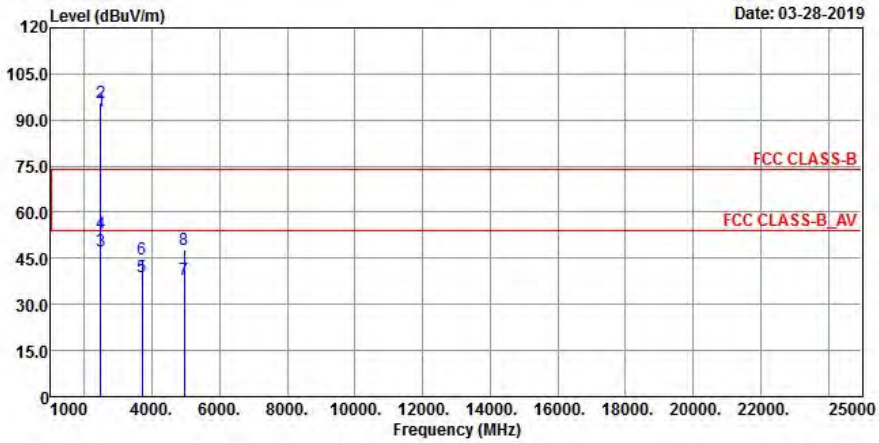
Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2467	99.42	104.26	-4.84			156	233	Average
2467	102.18	107.02	-4.84			156	233	Peak
2483.52	48.17	53.02	-4.85	54	-5.83	156	233	Average
2483.52	54.92	59.77	-4.85	74	-19.08	156	233	Peak
3700	41.28	59.17	-17.89	54	-12.72	218	334	Average
3700	46.93	64.82	-17.89	74	-27.07	218	334	Peak
4934	42.69	56.65	-13.96	54	-11.31	204	346	Average
4934	48.84	62.8	-13.96	74	-25.16	204	346	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2467	103.02	107.86	-4.84			120	69	Average
2467	105.79	110.63	-4.84			120	69	Peak
2483.52	51.26	56.11	-4.85	54	-2.74	120	69	Average
2483.52	57.23	62.08	-4.85	74	-16.77	120	69	Peak
3700	39.86	57.75	-17.89	54	-14.14	121	210	Average
3700	46.62	64.51	-17.89	74	-27.38	121	210	Peak
4934	40.98	54.94	-13.96	54	-13.02	120	319	Average
4934	49.45	63.41	-13.96	74	-24.55	120	319	Peak

Remarks:

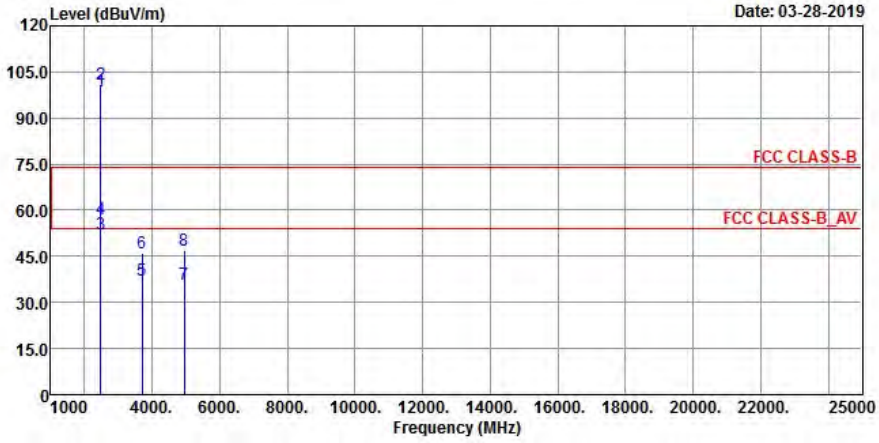
1. Emission Level = Read Level + Factor
   Margin value = Emission level – Limit value
2. 2467 MHz: Fundamental frequency.
3. The emission levels of other frequencies were very low against the limit.

EUT Test Condition		Measurement Detail	
Channel	Channel 13	**Frequency Range**	1 GHz ~ 25 GHz
Input Power	120 Vac, 60 Hz	**Detector Function**	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	**Tested By**	Thomas Wei

Horizontal



Vertical



Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2472	93.07	97.92	-4.85			121	225	Average
2472	95.58	100.43	-4.85			121	225	Peak
2483.52	47.35	52.2	-4.85	54	-6.65	121	225	Average
2483.52	53.29	58.14	-4.85	74	-20.71	121	225	Peak
3708	38.8	56.69	-17.89	54	-15.2	174	22	Average
3708	44.56	62.45	-17.89	74	-29.44	174	22	Peak
4944	38.15	52.1	-13.95	54	-15.85	231	346	Average
4944	47.71	61.66	-13.95	74	-26.29	231	346	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2472	98.83	103.68	-4.85			120	70	Average
2472	101.11	105.96	-4.85			120	70	Peak
2483.52	52.41	57.26	-4.85	54	-1.59	120	70	Average
2483.52	57.16	62.01	-4.85	74	-16.84	120	70	Peak
3708	37.23	55.12	-17.89	54	-16.77	122	213	Average
3708	46	63.89	-17.89	74	-28	122	213	Peak
4944	35.93	49.88	-13.95	54	-18.07	137	155	Average
4944	46.82	60.77	-13.95	74	-27.18	137	155	Peak

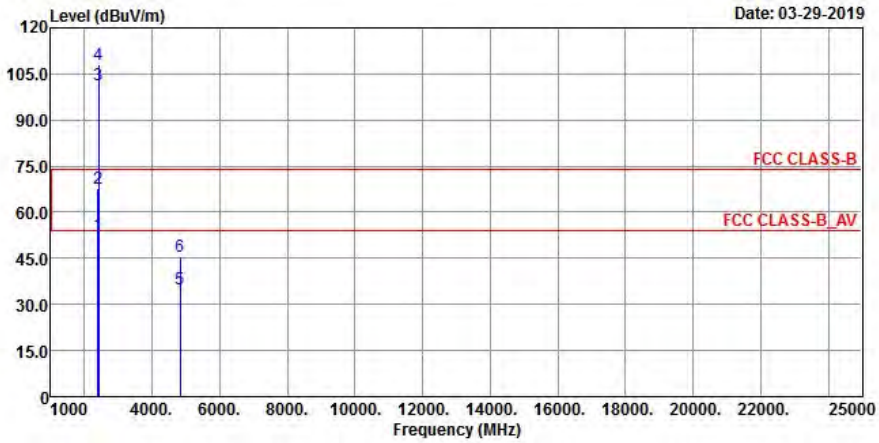
Remarks:

1. Emission Level = Read Level + Factor
   Margin value = Emission level – Limit value
2. 2472 MHz: Fundamental frequency.
3. The emission levels of other frequencies were very low against the limit.

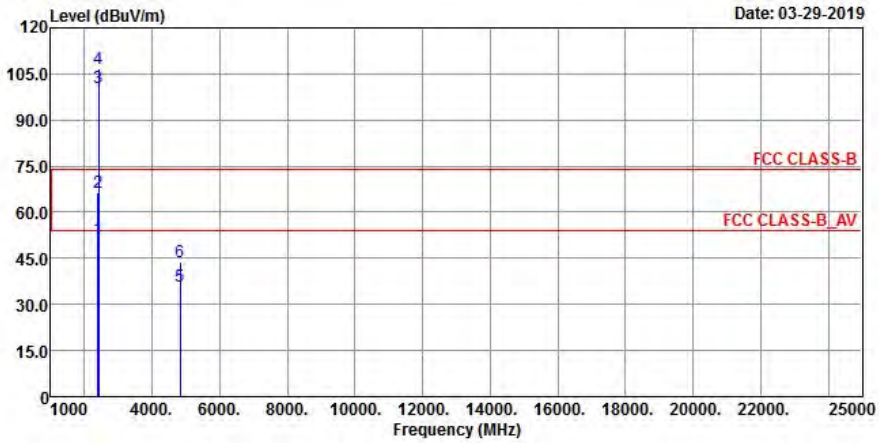
802.11g

EUT Test Condition		Measurement Detail	
Channel	Channel 1	**Frequency Range**	1 GHz ~ 25 GHz
Input Power	120 Vac, 60 Hz	**Detector Function**	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	**Tested By**	Thomas Wei

Horizontal



Vertical



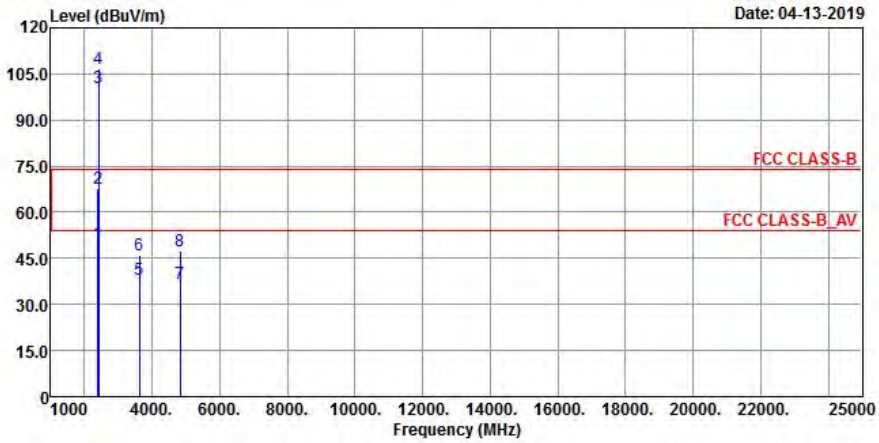
Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
2389.94	52.49	57.49	-5	54	-1.51	254	307	Average
2389.94	67.87	72.87	-5	74	-6.13	254	307	Peak
2412	101.6	106.61	-5.01			254	307	Average
2412	108.1	113.11	-5.01			254	307	Peak
4824	35.15	49.53	-14.38	54	-18.85	145	203	Average
4824	45.83	60.21	-14.38	74	-28.17	145	203	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
2389.8	51.24	56.24	-5	54	-2.76	129	66	Average
2389.8	66.34	71.34	-5	74	-7.66	129	66	Peak
2412	100.4	105.41	-5.01			129	66	Average
2412	106.64	111.65	-5.01			129	66	Peak
4824	35.99	50.37	-14.38	54	-18.01	137	155	Average
4824	43.9	58.28	-14.38	74	-30.1	137	155	Peak

Remarks:

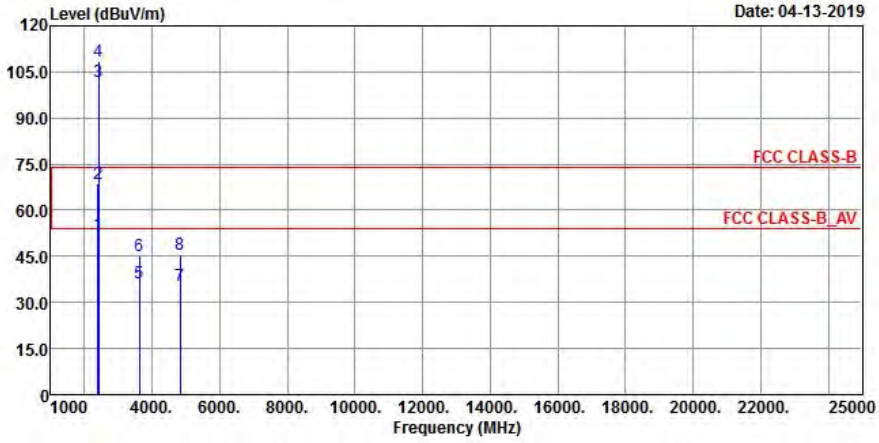
1. Emission Level = Read Level + Factor
   Margin value = Emission level – Limit value
2. 2412 MHz: Fundamental frequency.
3. The emission levels of other frequencies were very low against the limit.

EUT Test Condition		Measurement Detail	
Channel	Channel 2	**Frequency Range**	1 GHz ~ 25 GHz
Input Power	120 Vac, 60 Hz	**Detector Function**	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	**Tested By**	Thomas Wei

Horizontal



Vertical



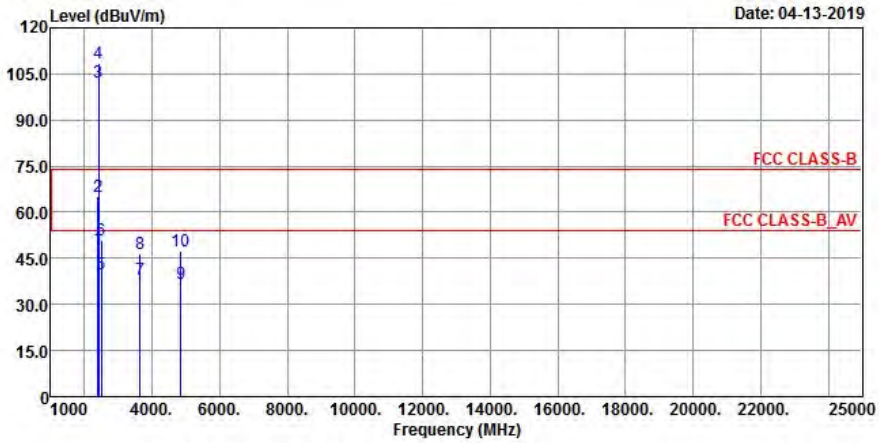
Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
2389.38	49.87	54.85	-4.98	54	-4.13	223	312	Average
2389.38	67.67	72.65	-4.98	74	-6.33	223	312	Peak
2417	100.56	105.51	-4.95			223	312	Average
2417	106.89	111.84	-4.95			223	312	Peak
3625.5	38.12	56.25	-18.13	54	-15.88	100	151	Average
3625.5	45.9	64.03	-18.13	74	-28.1	100	151	Peak
4834	36.82	51.1	-14.28	54	-17.18	157	200	Average
4834	47.43	61.71	-14.28	74	-26.57	157	200	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
2389.24	52.26	57.24	-4.98	54	-1.74	139	56	Average
2389.24	68.81	73.79	-4.98	74	-5.19	139	56	Peak
2417	102.01	106.96	-4.95			139	56	Average
2417	108.4	113.35	-4.95			139	56	Peak
3625.5	36.23	54.36	-18.13	54	-17.77	105	163	Average
3625.5	45.12	63.25	-18.13	74	-28.88	105	163	Peak
4834	35.23	49.51	-14.28	54	-18.77	203	117	Average
4834	45.53	59.81	-14.28	74	-28.47	203	117	Peak

Remarks:

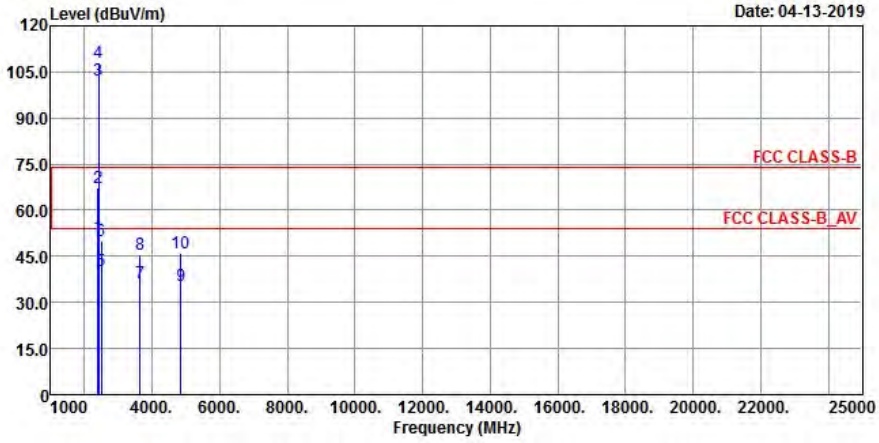
1. Emission Level = Read Level + Factor
   Margin value = Emission level – Limit value
2. 2417 MHz: Fundamental frequency.
3. The emission levels of other frequencies were very low against the limit.

EUT Test Condition		Measurement Detail	
Channel	Channel 3	**Frequency Range**	1 GHz ~ 25 GHz
Input Power	120 Vac, 60 Hz	**Detector Function**	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	**Tested By**	Thomas Wei

Horizontal



Vertical



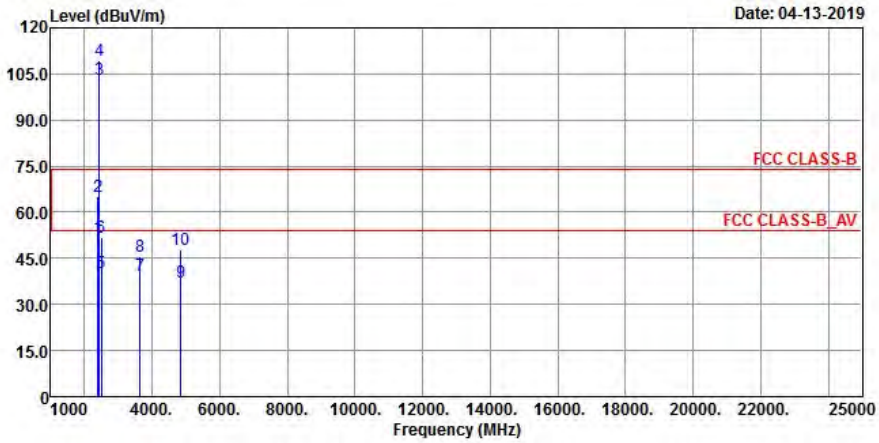
Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2389.24	48.44	53.42	-4.98	54	-5.56	250	310	Average
2389.24	65.25	70.23	-4.98	74	-8.75	250	310	Peak
2422	102.13	107.1	-4.97			250	310	Average
2422	108.38	113.35	-4.97			250	310	Peak
2495.4	39.99	44.77	-4.78	54	-14.01	250	310	Average
2495.4	50.71	55.49	-4.78	74	-23.29	250	310	Peak
3633	38.23	56.32	-18.09	54	-15.77	100	157	Average
3633	46.54	64.63	-18.09	74	-27.46	100	157	Peak
4844	36.7	50.97	-14.27	54	-17.3	190	267	Average
4844	47.19	61.46	-14.27	74	-26.81	190	267	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2389.66	51.51	56.49	-4.98	54	-2.49	140	56	Average
2389.66	67.28	72.26	-4.98	74	-6.72	140	56	Peak
2422	102.07	107.04	-4.97			140	56	Average
2422	108.25	113.22	-4.97			140	56	Peak
2495.6	40.32	45.1	-4.78	54	-13.68	140	56	Average
2495.6	50.24	55.02	-4.78	74	-23.76	140	56	Peak
3633	36.51	54.6	-18.09	54	-17.49	107	162	Average
3633	45.48	63.57	-18.09	74	-28.52	107	162	Peak
4844	35.43	49.7	-14.27	54	-18.57	154	198	Average
4844	45.94	60.21	-14.27	74	-28.06	154	198	Peak

Remarks:

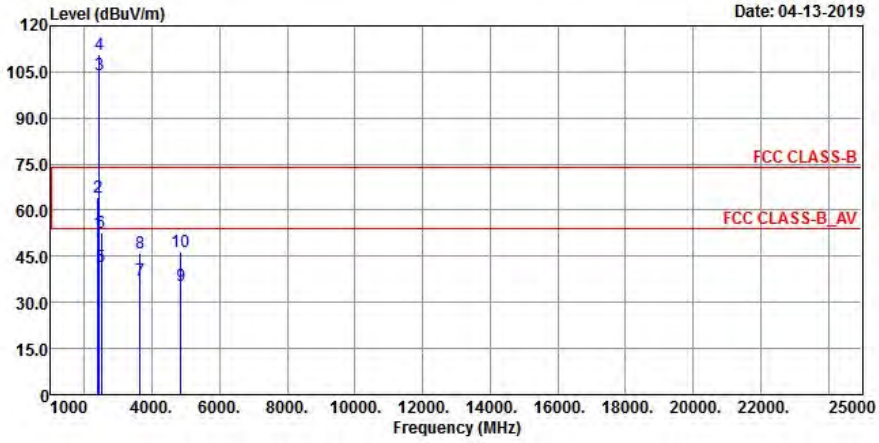
1. Emission Level = Read Level + Factor
   Margin value = Emission level – Limit value
2. 2422 MHz: Fundamental frequency.
3. The emission levels of other frequencies were very low against the limit.

EUT Test Condition		Measurement Detail	
Channel	Channel 4	**Frequency Range**	1 GHz ~ 25 GHz
Input Power	120 Vac, 60 Hz	**Detector Function**	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	**Tested By**	Thomas Wei

Horizontal



Vertical



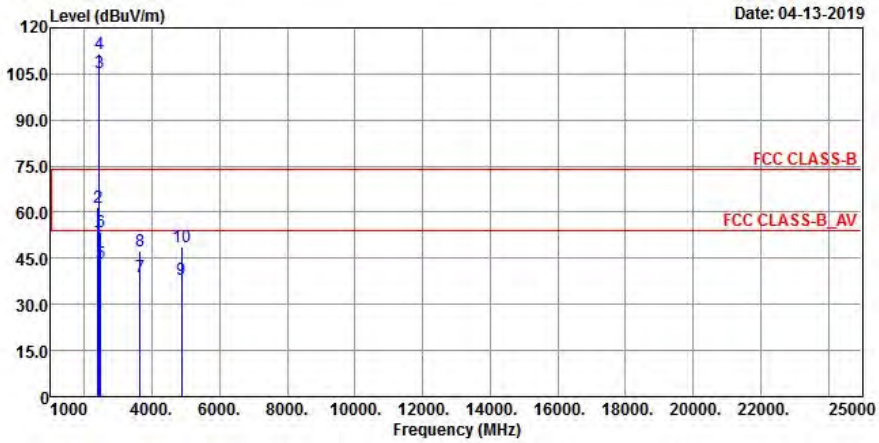
Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2389.38	51.64	56.62	-4.98	54	-2.36	248	320	Average
2389.38	65.06	70.04	-4.98	74	-8.94	248	320	Peak
2427	103.15	108.12	-4.97			248	320	Average
2427	109.33	114.3	-4.97			248	320	Peak
2484.44	40.45	45.3	-4.85	54	-13.55	248	320	Average
2484.44	51.73	56.58	-4.85	74	-22.27	248	320	Peak
3640.5	39.33	57.43	-18.1	54	-14.67	100	155	Average
3640.5	45.52	63.62	-18.1	74	-28.48	100	155	Peak
4854	37.1	51.29	-14.19	54	-16.9	127	164	Average
4854	47.85	62.04	-14.19	74	-26.15	127	164	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2389.94	52.49	57.49	-5	54	-1.51	136	133	Average
2389.94	64.26	69.26	-5	74	-9.74	136	133	Peak
2427	103.96	108.93	-4.97			136	133	Average
2427	110.6	115.57	-4.97			136	133	Peak
2484.16	41.71	46.56	-4.85	54	-12.29	136	133	Average
2484.16	52.63	57.48	-4.85	74	-21.37	136	133	Peak
3640.5	37.22	55.32	-18.1	54	-16.78	104	165	Average
3640.5	46.08	64.18	-18.1	74	-27.92	104	165	Peak
4854	35.57	49.76	-14.19	54	-18.43	197	103	Average
4854	46.6	60.79	-14.19	74	-27.4	197	103	Peak

Remarks:

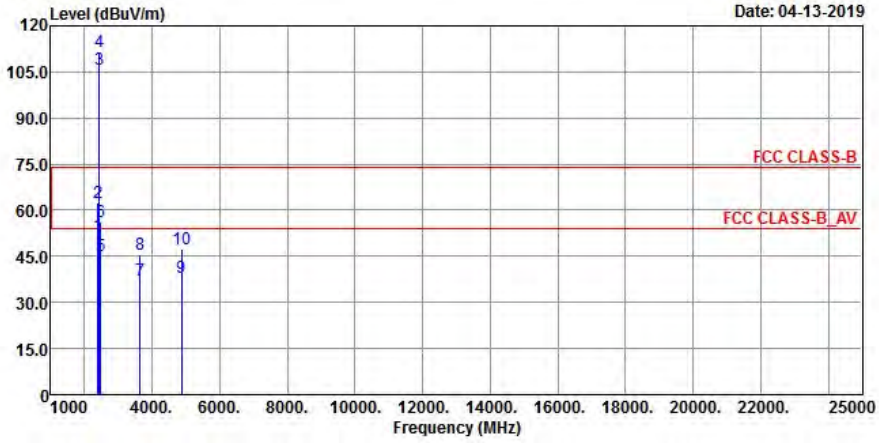
1. Emission Level = Read Level + Factor
   Margin value = Emission level – Limit value
2. 2427 MHz: Fundamental frequency.
3. The emission levels of other frequencies were very low against the limit.

EUT Test Condition		Measurement Detail	
Channel	Channel 5	**Frequency Range**	1 GHz ~ 25 GHz
Input Power	120 Vac, 60 Hz	**Detector Function**	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	**Tested By**	Thomas Wei

Horizontal



Vertical



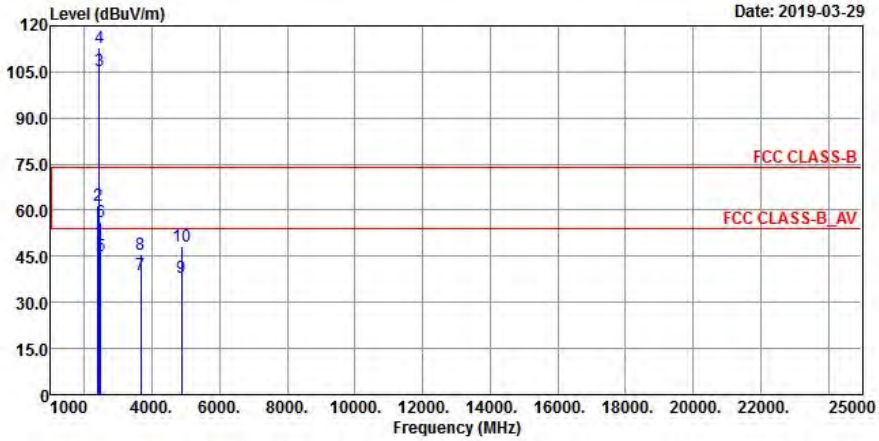
Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2389.8	51.13	56.13	-5	54	-2.87	248	319	Average
2389.8	61.55	66.55	-5	74	-12.45	248	319	Peak
2432	105.37	110.34	-4.97			248	319	Average
2432	111.63	116.6	-4.97			248	319	Peak
2483.64	43.29	48.14	-4.85	54	-10.71	248	319	Average
2483.64	53.37	58.22	-4.85	74	-20.63	248	319	Peak
3648	39.15	57.19	-18.04	54	-14.85	100	156	Average
3648	47.51	65.55	-18.04	74	-26.49	100	156	Peak
4864	38.14	52.31	-14.17	54	-15.86	175	241	Average
4864	48.91	63.08	-14.17	74	-25.09	175	241	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2389.66	51.68	56.66	-4.98	54	-2.32	138	130	Average
2389.66	62.4	67.38	-4.98	74	-11.6	138	130	Peak
2432	105.9	110.87	-4.97			138	130	Average
2432	111.71	116.68	-4.97			138	130	Peak
2483.52	45.18	50.03	-4.85	54	-8.82	138	130	Average
2483.52	56.03	60.88	-4.85	74	-17.97	138	130	Peak
3648	37.41	55.45	-18.04	54	-16.59	106	162	Average
3648	45.43	63.47	-18.04	74	-28.57	106	162	Peak
4864	37.94	52.11	-14.17	54	-16.06	169	201	Average
4864	47.19	61.36	-14.17	74	-26.81	169	201	Peak

Remarks:

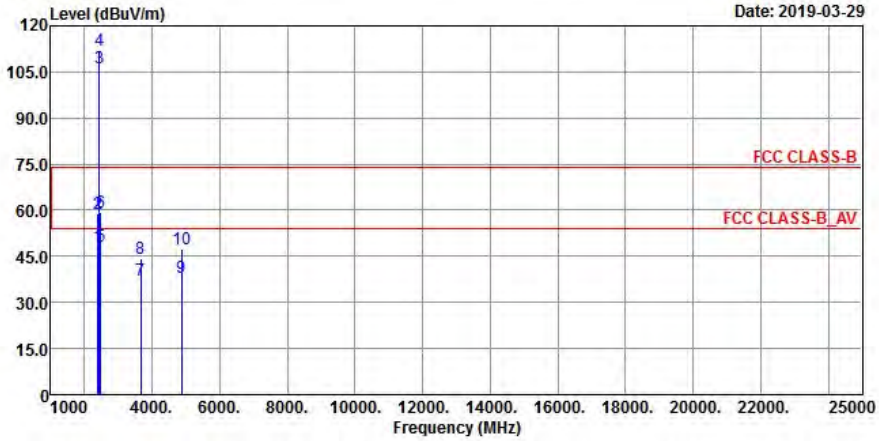
1. Emission Level = Read Level + Factor
   Margin value = Emission level – Limit value
2. 2432 MHz: Fundamental frequency.
3. The emission levels of other frequencies were very low against the limit.

EUT Test Condition		Measurement Detail	
Channel	Channel 6	**Frequency Range**	1 GHz ~ 25 GHz
Input Power	120 Vac, 60 Hz	**Detector Function**	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	**Tested By**	Tim Chen

Horizontal



Vertical



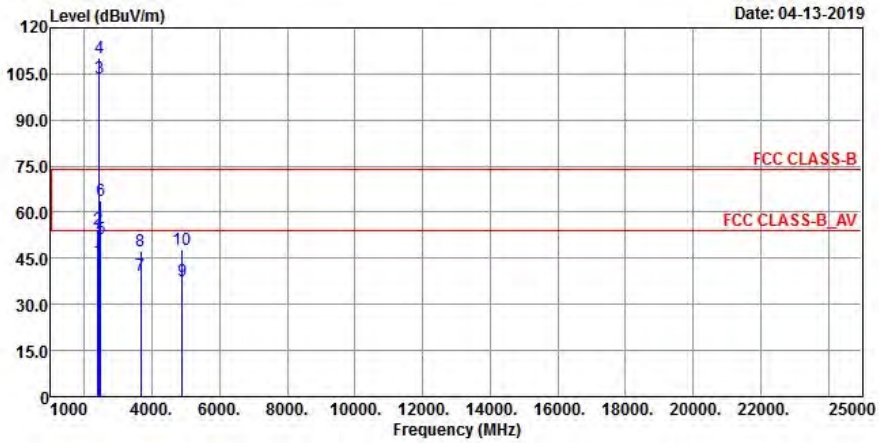
Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2389.66	49.61	54.59	-4.98	54	-4.39	276	303	Average
2389.66	61.46	66.44	-4.98	74	-12.54	276	303	Peak
2437	105.26	110.24	-4.98			276	303	Average
2437	113.06	118.04	-4.98			276	303	Peak
2483.76	45.1	49.95	-4.85	54	-8.9	276	303	Average
2483.76	56.16	61.01	-4.85	74	-17.84	276	303	Peak
3655.5	39.09	57.13	-18.04	54	-14.91	132	207	Average
3655.5	45.44	63.48	-18.04	74	-28.56	132	207	Peak
4874	38.06	52.14	-14.08	54	-15.94	146	118	Average
4874	48.18	62.26	-14.08	74	-25.82	146	118	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2389.94	48.3	53.3	-5	54	-5.7	122	88	Average
2389.94	59.1	64.1	-5	74	-14.9	122	88	Peak
2437	106.34	111.32	-4.98			122	88	Average
2437	112.13	117.11	-4.98			122	88	Peak
2483.52	48.14	52.99	-4.85	54	-5.86	122	88	Average
2483.52	59.33	64.18	-4.85	74	-14.67	122	88	Peak
3655.5	37.39	55.43	-18.04	54	-16.61	142	119	Average
3655.5	44.39	62.43	-18.04	74	-29.61	142	119	Peak
4874	38.25	52.33	-14.08	54	-15.75	151	304	Average
4874	47.19	61.27	-14.08	74	-26.81	151	304	Peak

Remarks:

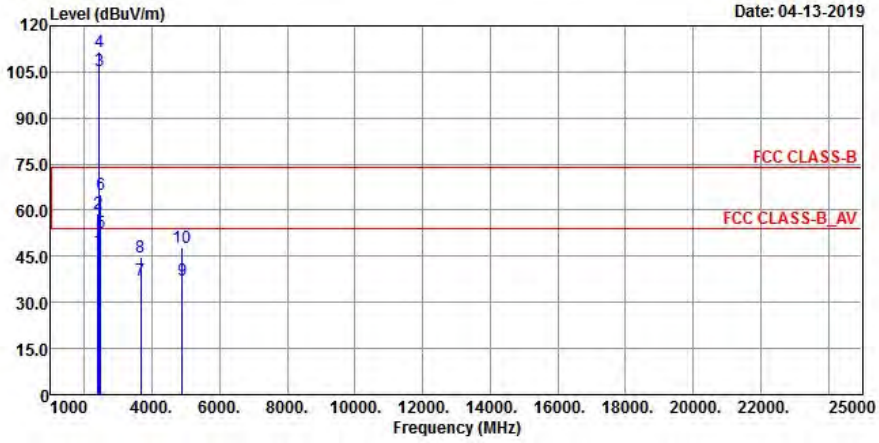
1. Emission Level = Read Level + Factor
   Margin value = Emission level – Limit value
2. 2437 MHz: Fundamental frequency.
3. The emission levels of other frequencies were very low against the limit.

EUT Test Condition		Measurement Detail	
Channel	Channel 7	**Frequency Range**	1 GHz ~ 25 GHz
Input Power	120 Vac, 60 Hz	**Detector Function**	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	**Tested By**	Thomas Wei

Horizontal



Vertical



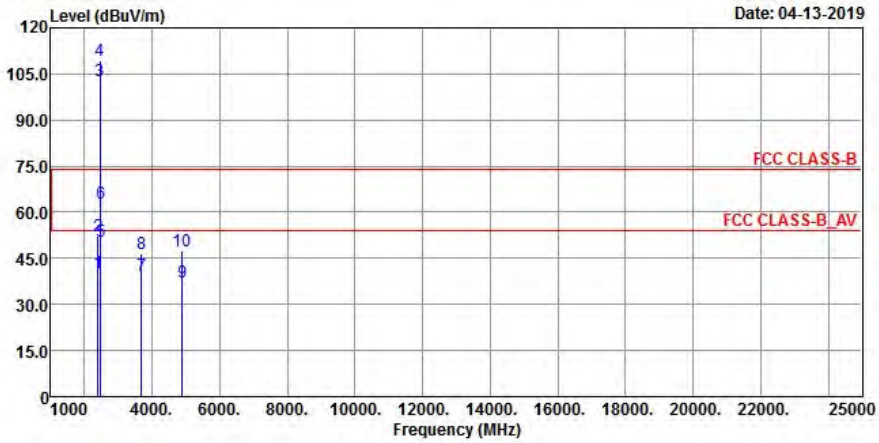
Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2389.94	44.08	49.08	-5	54	-9.92	259	313	Average
2389.94	54.49	59.49	-5	74	-19.51	259	313	Peak
2442	103.69	108.6	-4.91			259	313	Average
2442	110.35	115.26	-4.91			259	313	Peak
2483.68	51.57	56.42	-4.85	54	-2.43	259	313	Average
2483.68	63.92	68.77	-4.85	74	-10.08	259	313	Peak
3663	39.25	57.24	-17.99	54	-14.75	100	154	Average
3663	47.36	65.35	-17.99	74	-26.64	100	154	Peak
4884	37.64	51.72	-14.08	54	-16.36	175	256	Average
4884	47.94	62.02	-14.08	74	-26.06	175	256	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2389.94	46.97	51.97	-5	54	-7.03	100	132	Average
2389.94	58.94	63.94	-5	74	-15.06	100	132	Peak
2442	105.17	110.08	-4.91			100	132	Average
2442	111.7	116.61	-4.91			100	132	Peak
2483.64	52.49	57.34	-4.85	54	-1.51	100	132	Average
2483.64	65.23	70.08	-4.85	74	-8.77	100	132	Peak
3663	37.02	55.01	-17.99	54	-16.98	103	166	Average
3663	44.62	62.61	-17.99	74	-29.38	103	166	Peak
4884	37.21	51.29	-14.08	54	-16.79	154	133	Average
4884	47.76	61.84	-14.08	74	-26.24	154	133	Peak

Remarks:

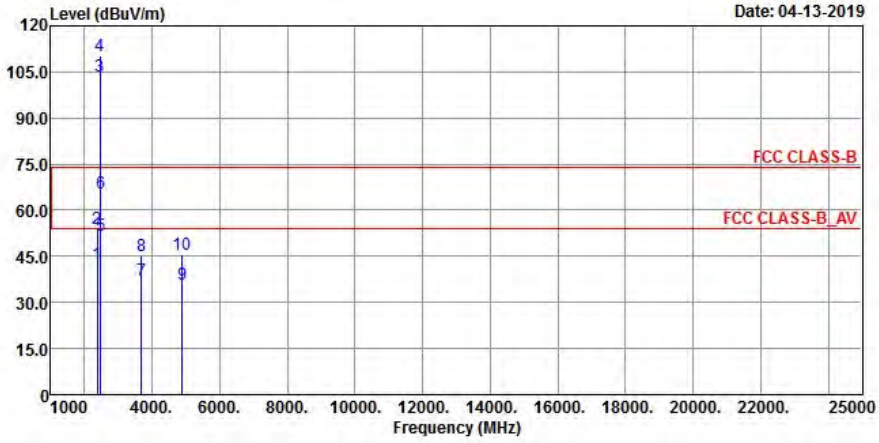
1. Emission Level = Read Level + Factor
   Margin value = Emission level – Limit value
2. 2442 MHz: Fundamental frequency.
3. The emission levels of other frequencies were very low against the limit.

EUT Test Condition		Measurement Detail	
Channel	Channel 8	**Frequency Range**	1 GHz ~ 25 GHz
Input Power	120 Vac, 60 Hz	**Detector Function**	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	**Tested By**	Thomas Wei

Horizontal



Vertical



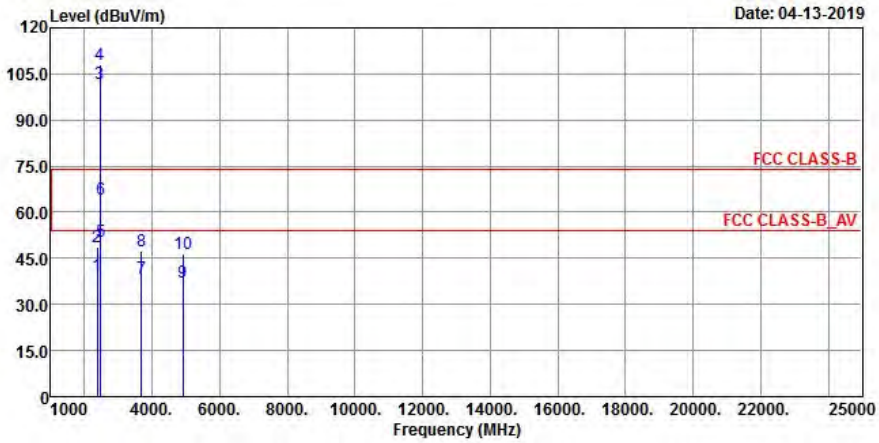
Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2389.94	40.44	45.44	-5	54	-13.56	260	314	Average
2389.94	52.18	57.18	-5	74	-21.82	260	314	Peak
2447	102.69	107.6	-4.91			260	314	Average
2447	109.27	114.18	-4.91			260	314	Peak
2483.52	50.52	55.37	-4.85	54	-3.48	260	314	Average
2483.52	62.74	67.59	-4.85	74	-11.26	260	314	Peak
3670.5	39.51	57.5	-17.99	54	-14.49	100	153	Average
3670.5	46.51	64.5	-17.99	74	-27.49	100	153	Peak
4894	37.4	51.39	-13.99	54	-16.6	181	249	Average
4894	47.23	61.22	-13.99	74	-26.77	181	249	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2371.6	42.51	47.4	-4.89	54	-11.49	128	132	Average
2371.6	53.82	58.71	-4.89	74	-20.18	128	132	Peak
2447	103.41	108.32	-4.91			128	132	Average
2447	110.25	115.16	-4.91			128	132	Peak
2483.52	51.74	56.59	-4.85	54	-2.26	128	132	Average
2483.52	65.55	70.4	-4.85	74	-8.45	128	132	Peak
3670.5	37.16	55.15	-17.99	54	-16.84	103	164	Average
3670.5	45.04	63.03	-17.99	74	-28.96	103	164	Peak
4894	35.82	49.81	-13.99	54	-18.18	134	158	Average
4894	45.8	59.79	-13.99	74	-28.2	134	158	Peak

Remarks:

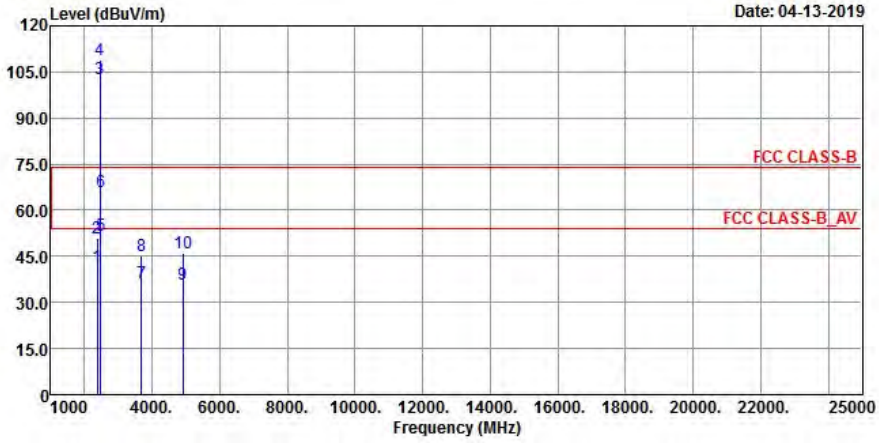
1. Emission Level = Read Level + Factor
   Margin value = Emission level – Limit value
2. 2447 MHz: Fundamental frequency.
3. The emission levels of other frequencies were very low against the limit.

EUT Test Condition		Measurement Detail	
Channel	Channel 9	**Frequency Range**	1 GHz ~ 25 GHz
Input Power	120 Vac, 60 Hz	**Detector Function**	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	**Tested By**	Thomas Wei

Horizontal



Vertical



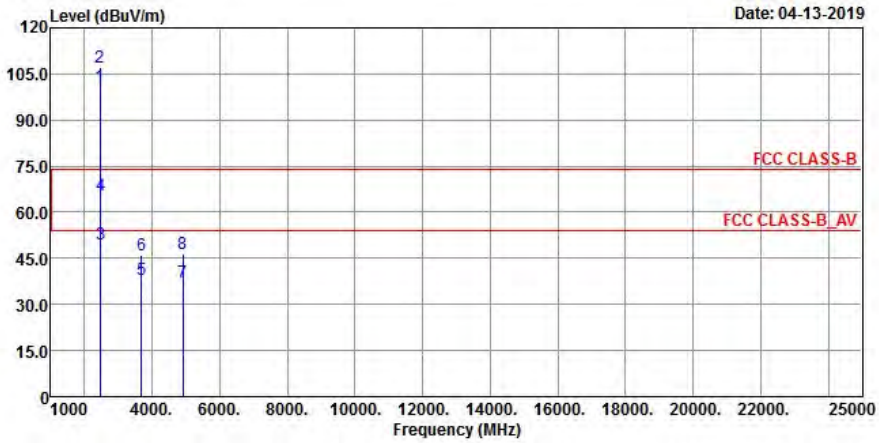
Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2378.04	39.49	44.38	-4.89	54	-14.51	260	313	Average
2378.04	48.86	53.75	-4.89	74	-25.14	260	313	Peak
2452	101.81	106.72	-4.91			260	313	Average
2452	108.1	113.01	-4.91			260	313	Peak
2483.92	50.41	55.26	-4.85	54	-3.59	260	313	Average
2483.92	64.35	69.2	-4.85	74	-9.65	260	313	Peak
3678	38.56	56.5	-17.94	54	-15.44	100	152	Average
3678	47.52	65.46	-17.94	74	-26.48	100	152	Peak
4904	37.05	51.03	-13.98	54	-16.95	161	255	Average
4904	46.72	60.7	-13.98	74	-27.28	161	255	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2376.36	41.61	46.5	-4.89	54	-12.39	128	133	Average
2376.36	50.96	55.85	-4.89	74	-23.04	128	133	Peak
2452	102.88	107.79	-4.91			128	133	Average
2452	109.11	114.02	-4.91			128	133	Peak
2483.72	51.62	56.47	-4.85	54	-2.38	128	133	Average
2483.72	65.85	70.7	-4.85	74	-8.15	128	133	Peak
3678	36.32	54.26	-17.94	54	-17.68	104	164	Average
3678	45.08	63.02	-17.94	74	-28.92	104	164	Peak
4904	35.84	49.82	-13.98	54	-18.16	179	74	Average
4904	45.84	59.82	-13.98	74	-28.16	179	74	Peak

Remarks:

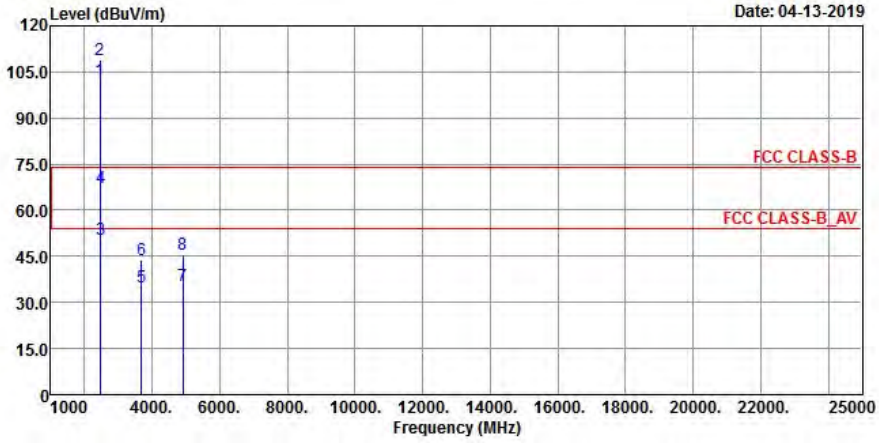
1. Emission Level = Read Level + Factor
   Margin value = Emission level – Limit value
2. 2452 MHz: Fundamental frequency.
3. The emission levels of other frequencies were very low against the limit.

EUT Test Condition		Measurement Detail	
Channel	Channel 10	**Frequency Range**	1 GHz ~ 25 GHz
Input Power	120 Vac, 60 Hz	**Detector Function**	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	**Tested By**	Thomas Wei

Horizontal



Vertical



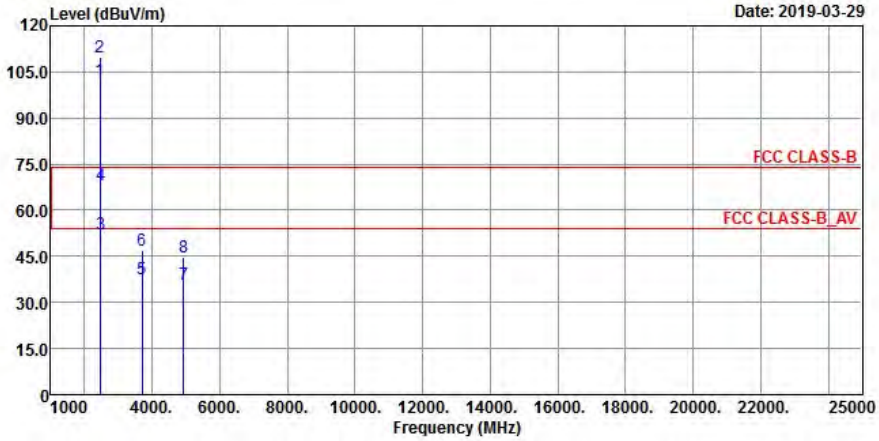
Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
2457	100.78	105.69	-4.91			258	315	Average
2457	107.16	112.07	-4.91			258	315	Peak
2483.56	49.42	54.27	-4.85	54	-4.58	258	315	Average
2483.56	65.7	70.55	-4.85	74	-8.3	258	315	Peak
3685.5	38.06	56	-17.94	54	-15.94	100	155	Average
3685.5	46.13	64.07	-17.94	74	-27.87	100	155	Peak
4914	37.08	51.06	-13.98	54	-16.92	157	46	Average
4914	46.51	60.49	-13.98	74	-27.49	157	46	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
2457	102.42	107.33	-4.91			128	134	Average
2457	108.75	113.66	-4.91			128	134	Peak
2483.84	50.62	55.47	-4.85	54	-3.38	128	134	Average
2483.84	67.49	72.34	-4.85	74	-6.51	128	134	Peak
3685.5	35.06	53	-17.94	54	-18.94	100	168	Average
3685.5	43.94	61.88	-17.94	74	-30.06	100	168	Peak
4914	35.64	49.62	-13.98	54	-18.36	211	263	Average
4914	45.55	59.53	-13.98	74	-28.45	211	263	Peak

Remarks:

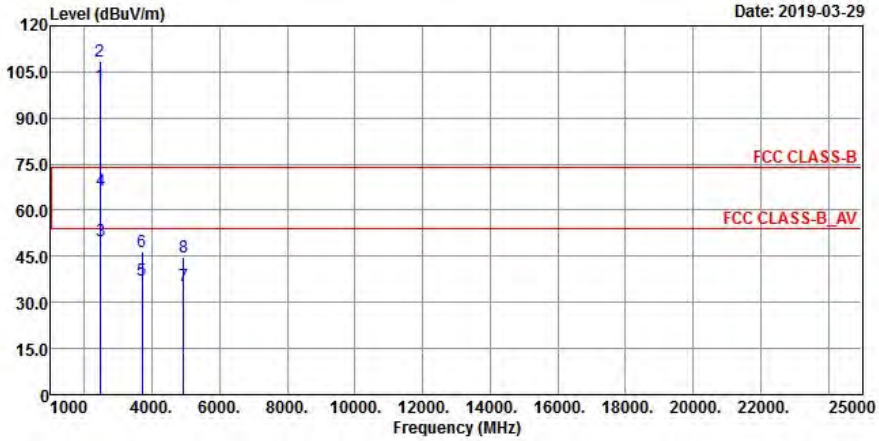
1. Emission Level = Read Level + Factor
   Margin value = Emission level – Limit value
2. 2457 MHz: Fundamental frequency.
3. The emission levels of other frequencies were very low against the limit.

EUT Test Condition		Measurement Detail	
Channel	Channel 11	**Frequency Range**	1 GHz ~ 25 GHz
Input Power	120 Vac, 60 Hz	**Detector Function**	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	**Tested By**	Tim Chen

Horizontal



Vertical



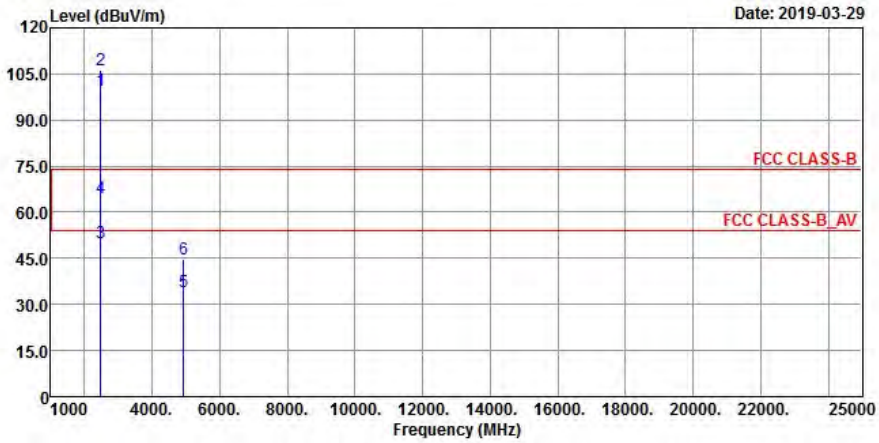
Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2462	102.08	106.99	-4.91			259	312	Average
2462	109.9	114.81	-4.91			259	312	Peak
2484	52.33	57.18	-4.85	54	-1.67	259	312	Average
2484	68.3	73.15	-4.85	74	-5.7	259	312	Peak
3693	37.69	55.63	-17.94	54	-16.31	120	146	Average
3693	47.03	64.97	-17.94	74	-26.97	120	146	Peak
4924	36.01	49.97	-13.96	54	-17.99	132	158	Average
4924	44.86	58.82	-13.96	74	-29.14	132	158	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2462	100.74	105.65	-4.91			120	75	Average
2462	108.54	113.45	-4.91			120	75	Peak
2483.52	49.96	54.81	-4.85	54	-4.04	120	75	Average
2483.52	66.52	71.37	-4.85	74	-7.48	120	75	Peak
3693	37.09	55.03	-17.94	54	-16.91	123	201	Average
3693	46.31	64.25	-17.94	74	-27.69	123	201	Peak
4924	35.36	49.32	-13.96	54	-18.64	162	155	Average
4924	44.7	58.66	-13.96	74	-29.3	162	155	Peak

Remarks:

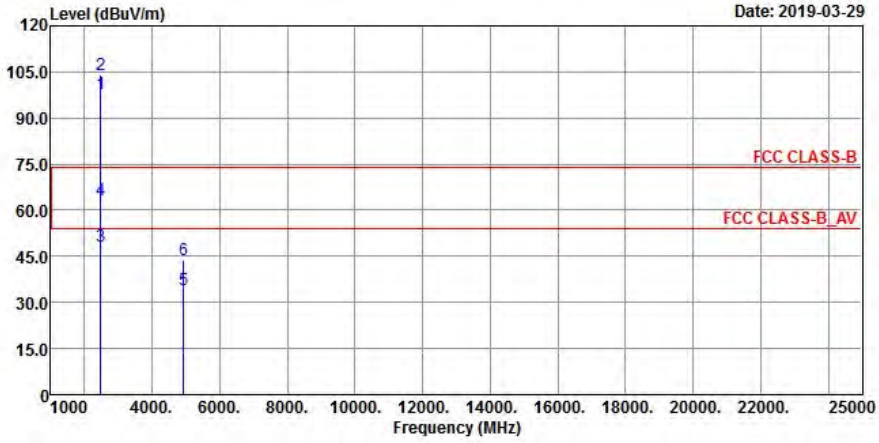
1. Emission Level = Read Level + Factor
   Margin value = Emission level – Limit value
2. 2462 MHz: Fundamental frequency.
3. The emission levels of other frequencies were very low against the limit.

EUT Test Condition		Measurement Detail	
Channel	Channel 12	**Frequency Range**	1 GHz ~ 25 GHz
Input Power	120 Vac, 60 Hz	**Detector Function**	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	**Tested By**	Tim Chen

Horizontal



Vertical



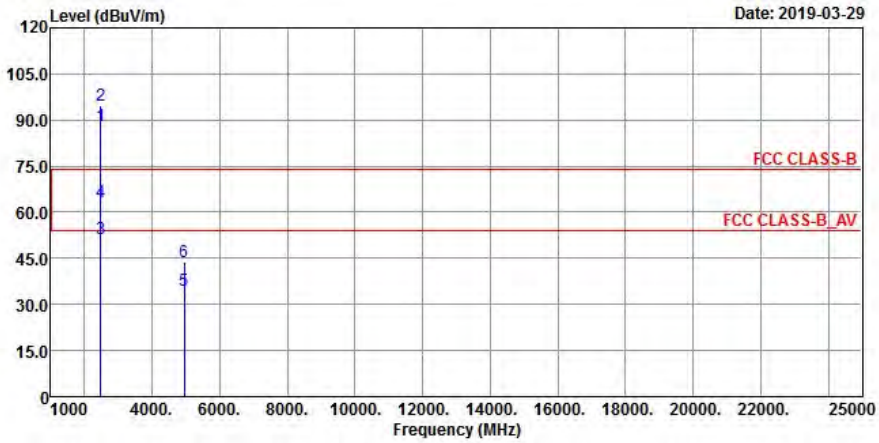
Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2467	99.74	104.58	-4.84			261	312	Average
2467	106.05	110.89	-4.84			261	312	Peak
2483.52	49.95	54.8	-4.85	54	-4.05	261	312	Average
2483.52	64.61	69.46	-4.85	74	-9.39	261	312	Peak
4934	34.07	48.03	-13.96	54	-19.93	134	255	Average
4934	44.62	58.58	-13.96	74	-29.38	134	255	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2467	97.91	102.75	-4.84			120	74	Average
2467	104.18	109.02	-4.84			120	74	Peak
2483.68	48.17	53.02	-4.85	54	-5.83	120	74	Average
2483.68	63.2	68.05	-4.85	74	-10.8	120	74	Peak
4934	34.26	48.22	-13.96	54	-19.74	126	331	Average
4935	43.96	57.92	-13.96	74	-30.04	126	331	Peak

Remarks:

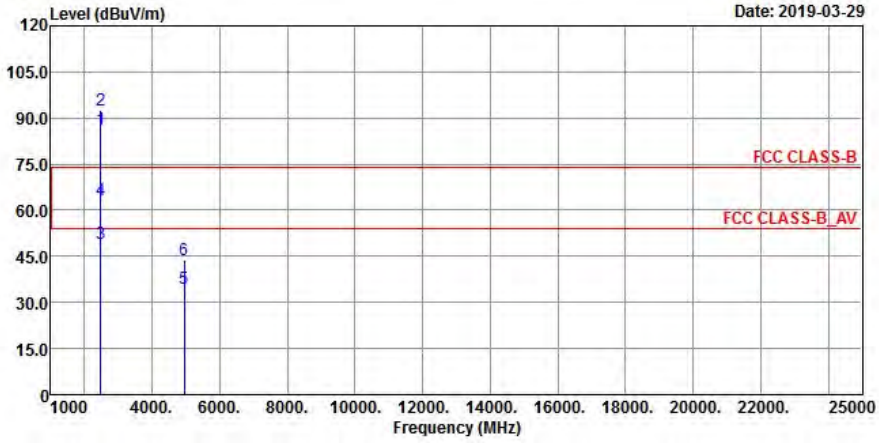
1. Emission Level = Read Level + Factor
   Margin value = Emission level – Limit value
2. 2467 MHz: Fundamental frequency.
3. The emission levels of other frequencies were very low against the limit.

EUT Test Condition		Measurement Detail	
Channel	Channel 13	**Frequency Range**	1 GHz ~ 25 GHz
Input Power	120 Vac, 60 Hz	**Detector Function**	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	**Tested By**	Tim Chen

Horizontal



Vertical



Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2472	88.25	93.1	-4.85			262	311	Average
2472	94.84	99.69	-4.85			262	311	Peak
2483.52	51.16	56.01	-4.85	54	-2.84	262	311	Average
2483.52	63.36	68.21	-4.85	74	-10.64	262	311	Peak
4944	34.42	48.37	-13.95	54	-19.58	136	108	Average
4944	43.91	57.86	-13.95	74	-30.09	136	108	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2472	86.37	91.22	-4.85			120	78	Average
2472	92.35	97.2	-4.85			120	78	Peak
2483.52	49.26	54.11	-4.85	54	-4.74	120	78	Average
2483.52	63.21	68.06	-4.85	74	-10.79	120	78	Peak
4944	34.39	48.34	-13.95	54	-19.61	137	158	Average
4944	43.99	57.94	-13.95	74	-30.01	137	158	Peak

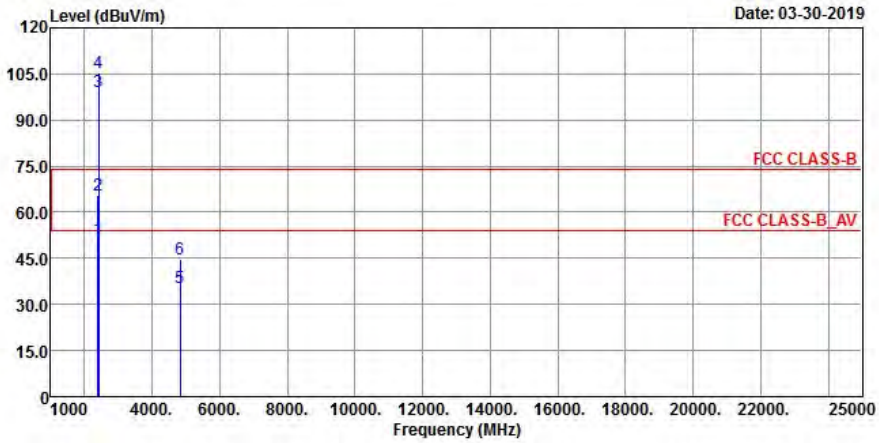
Remarks:

1. Emission Level = Read Level + Factor
   Margin value = Emission level – Limit value
2. 2472 MHz: Fundamental frequency.
3. The emission levels of other frequencies were very low against the limit.

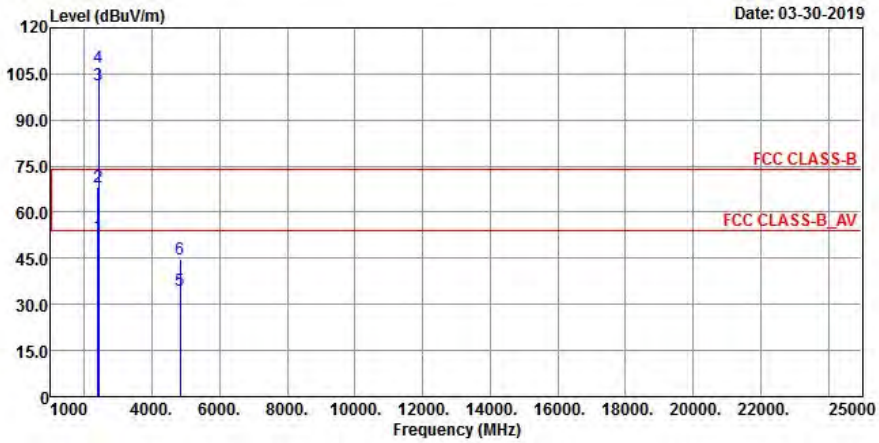
802.11n (HT20)

EUT Test Condition		Measurement Detail	
Channel	Channel 1	**Frequency Range**	1 GHz ~ 25 GHz
Input Power	120 Vac, 60 Hz	**Detector Function**	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	**Tested By**	Thomas Wei

Horizontal



Vertical



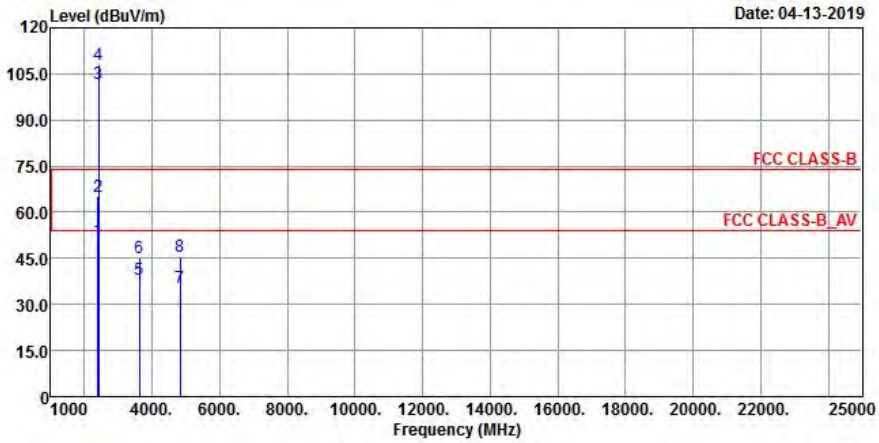
Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
2389.94	51.44	56.44	-5	54	-2.56	273	305	Average
2389.94	65.6	70.6	-5	74	-8.4	273	305	Peak
2412	99.12	104.13	-5.01			273	305	Average
2412	105.54	110.55	-5.01			273	305	Peak
4824	35.36	49.74	-14.38	54	-18.64	158	162	Average
4824	44.79	59.17	-14.38	74	-29.21	158	162	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
2389.94	52.35	57.35	-5	54	-1.65	139	91	Average
2389.94	68.13	73.13	-5	74	-5.87	139	91	Peak
2412	101.34	106.35	-5.01			139	91	Average
2412	107.29	112.3	-5.01			139	91	Peak
4824	34.48	48.86	-14.38	54	-19.52	146	98	Average
4824	44.65	59.03	-14.38	74	-29.35	146	98	Peak

Remarks:

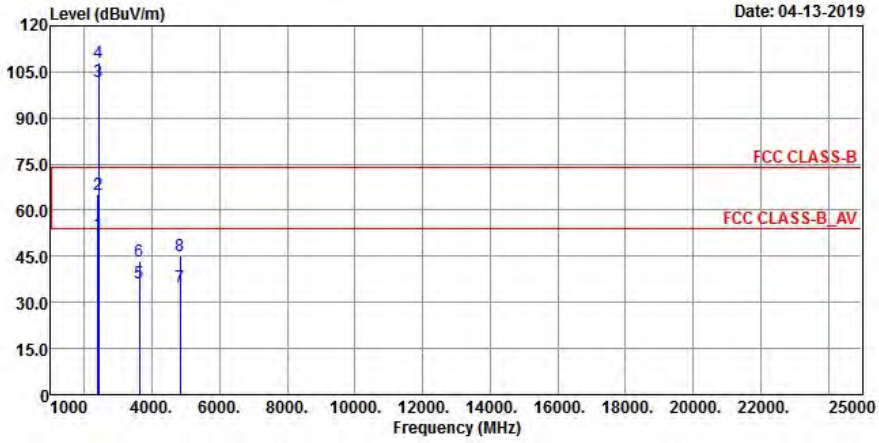
1. Emission Level = Read Level + Factor
   Margin value = Emission level – Limit value
2. 2412 MHz: Fundamental frequency.
3. The emission levels of other frequencies were very low against the limit.

EUT Test Condition		Measurement Detail	
Channel	Channel 2	**Frequency Range**	1 GHz ~ 25 GHz
Input Power	120 Vac, 60 Hz	**Detector Function**	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	**Tested By**	Thomas Wei

Horizontal



Vertical



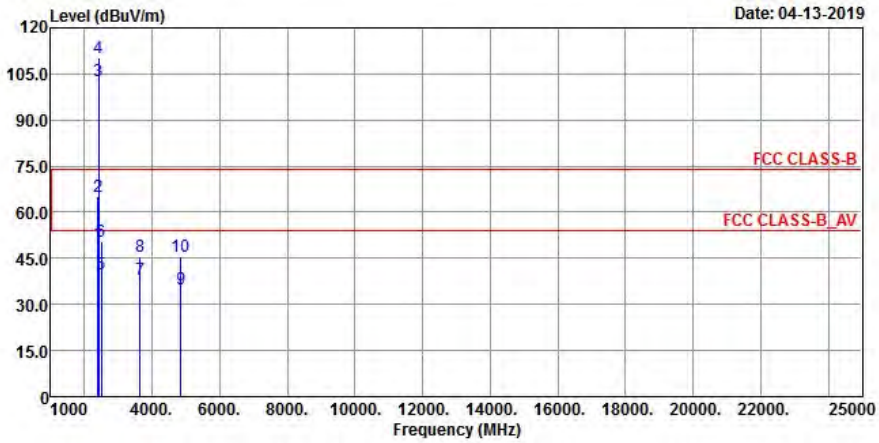
Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
2389.94	51.11	56.11	-5	54	-2.89	248	318	Average
2389.94	65.06	70.06	-5	74	-8.94	248	318	Peak
2417	101.69	106.64	-4.95	54			318	Average
2417	107.96	112.91	-4.95	74			318	Peak
3625.5	37.97	56.1	-18.13	54	-16.03	100	157	Average
3625.5	45.17	63.3	-18.13	74	-28.83	100	157	Peak
4834	35.29	49.57	-14.28	54	-18.71	168	205	Average
4834	45.48	59.76	-14.28	74	-28.52	168	205	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
2389.8	52.24	57.24	-5	54	-1.76	138	129	Average
2389.8	65.26	70.26	-5	74	-8.74	138	129	Peak
2417	101.82	106.77	-4.95	54			129	Average
2417	108.21	113.16	-4.95	74			129	Peak
3625.5	36.52	54.65	-18.13	54	-17.48	184	165	Average
3625.5	43.18	61.31	-18.13	74	-30.82	184	165	Peak
4834	35.15	49.43	-14.28	54	-18.85	146	215	Average
4834	45.21	59.49	-14.28	74	-28.79	146	215	Peak

Remarks:

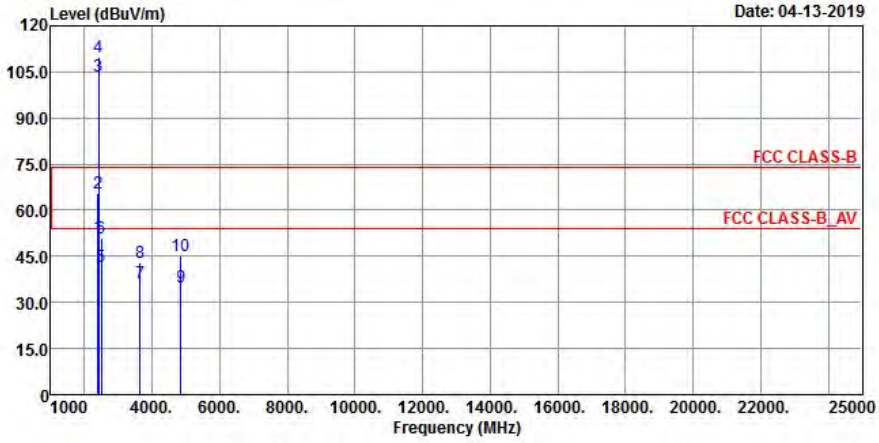
1. Emission Level = Read Level + Factor
   Margin value = Emission level – Limit value
2. 2417 MHz: Fundamental frequency.
3. The emission levels of other frequencies were very low against the limit.

EUT Test Condition		Measurement Detail	
Channel	Channel 3	**Frequency Range**	1 GHz ~ 25 GHz
Input Power	120 Vac, 60 Hz	**Detector Function**	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	**Tested By**	Thomas Wei

Horizontal



Vertical



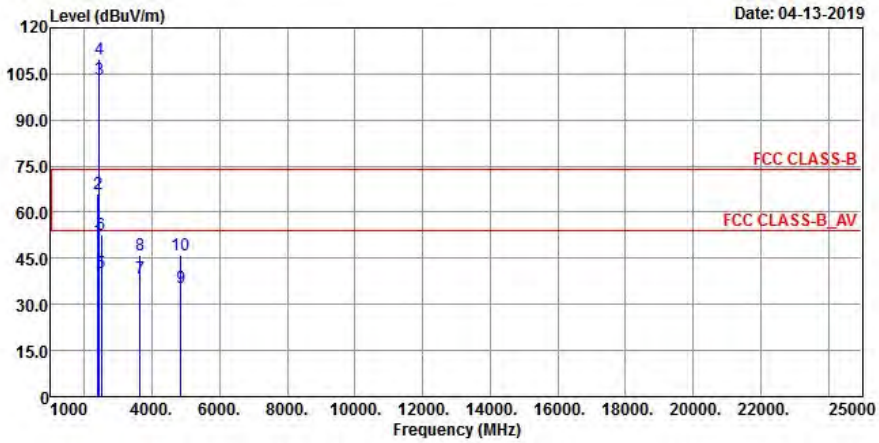
Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2389.52	49.89	54.87	-4.98	54	-4.11	248	318	Average
2389.52	65.16	70.14	-4.98	74	-8.84	248	318	Peak
2422	102.91	107.88	-4.97			248	318	Average
2422	110.25	115.22	-4.97			248	318	Peak
2494.2	39.98	44.76	-4.78	54	-14.02	248	318	Average
2494.2	50.28	55.06	-4.78	74	-23.72	248	318	Peak
3633	37.99	56.08	-18.09	54	-16.01	100	157	Average
3633	45.42	63.51	-18.09	74	-28.58	100	157	Peak
4844	35.14	49.41	-14.27	54	-18.86	168	251	Average
4844	45.49	59.76	-14.27	74	-28.51	168	251	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2389.94	51.2	56.2	-5	54	-2.8	136	128	Average
2389.94	65.72	70.72	-5	74	-8.28	136	128	Peak
2422	103.59	108.56	-4.97			136	128	Average
2422	109.85	114.82	-4.97			136	128	Peak
2496.24	41.44	46.22	-4.78	54	-12.56	136	128	Average
2496.24	50.82	55.6	-4.78	74	-23.18	136	128	Peak
3633	36.37	54.46	-18.09	54	-17.63	182	166	Average
3633	42.91	61	-18.09	74	-31.09	182	166	Peak
4844	34.88	49.15	-14.27	54	-19.12	152	237	Average
4844	44.99	59.26	-14.27	74	-29.01	152	237	Peak

Remarks:

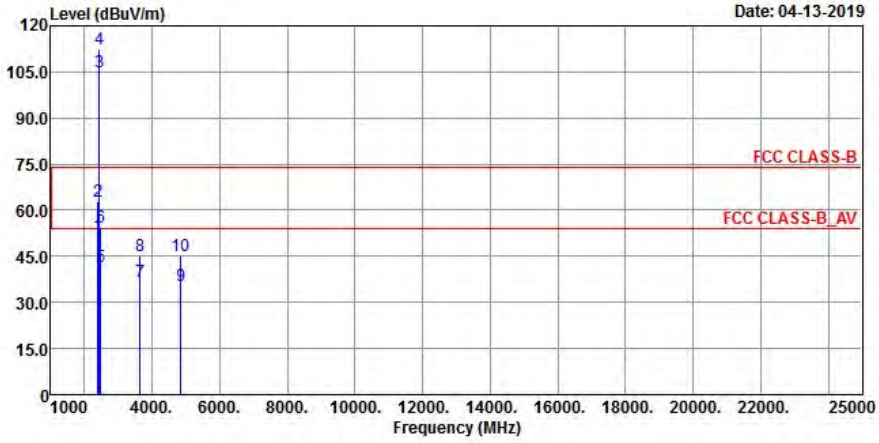
1. Emission Level = Read Level + Factor
   Margin value = Emission level – Limit value
2. 2422 MHz: Fundamental frequency.
3. The emission levels of other frequencies were very low against the limit.

EUT Test Condition		Measurement Detail	
Channel	Channel 4	**Frequency Range**	1 GHz ~ 25 GHz
Input Power	120 Vac, 60 Hz	**Detector Function**	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	**Tested By**	Thomas Wei

Horizontal



Vertical



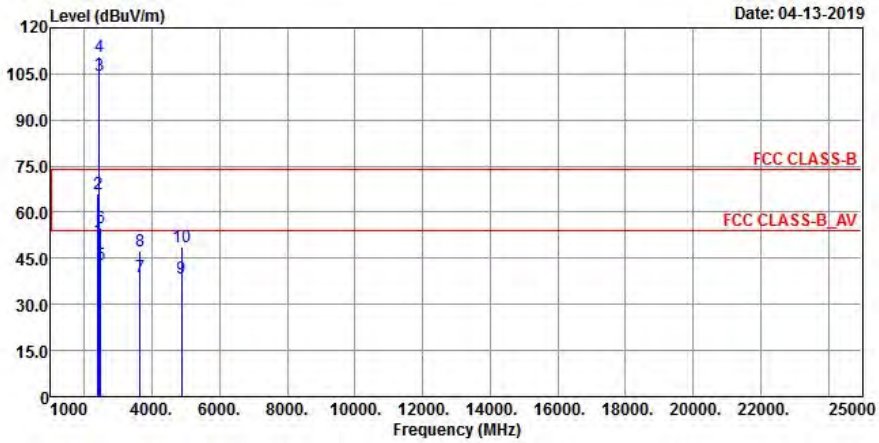
Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2389.8	51.09	56.09	-5	54	-2.91	250	320	Average
2389.8	65.97	70.97	-5	74	-8.03	250	320	Peak
2427	103.39	108.36	-4.97			250	320	Average
2427	109.69	114.66	-4.97			250	320	Peak
2484.04	40.09	44.94	-4.85	54	-13.91	250	320	Average
2484.04	52.84	57.69	-4.85	74	-21.16	250	320	Peak
3640.5	38.4	56.5	-18.1	54	-15.6	100	157	Average
3640.5	46.06	64.16	-18.1	74	-27.94	100	157	Peak
4854	35.59	49.78	-14.19	54	-18.41	195	122	Average
4854	45.96	60.15	-14.19	74	-28.04	195	122	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2389.8	52.02	57.02	-5	54	-1.98	134	133	Average
2389.8	62.88	67.88	-5	74	-11.12	134	133	Peak
2427	105.12	110.09	-4.97			134	133	Average
2427	112.48	117.45	-4.97			134	133	Peak
2483.8	41.76	46.61	-4.85	54	-12.24	134	133	Average
2483.8	54.28	59.13	-4.85	74	-19.72	134	133	Peak
3640.5	36.77	54.87	-18.1	54	-17.23	104	169	Average
3640.5	45.19	63.29	-18.1	74	-28.81	104	169	Peak
4854	35.33	49.52	-14.19	54	-18.67	183	264	Average
4854	45.34	59.53	-14.19	74	-28.66	183	264	Peak

Remarks:

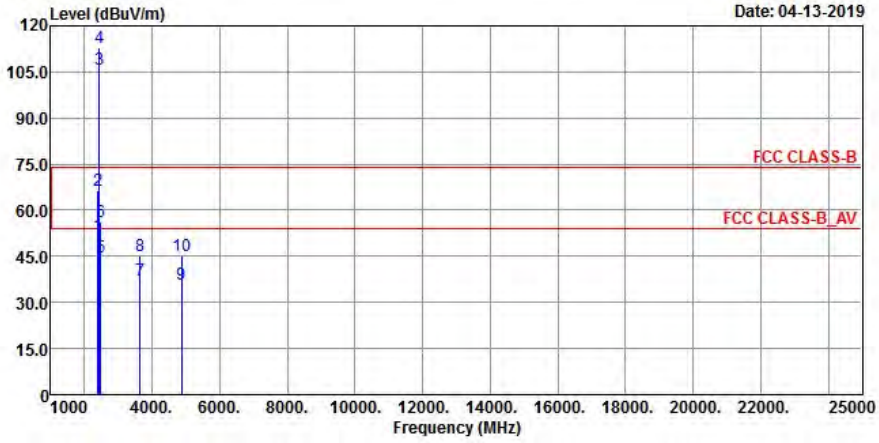
1. Emission Level = Read Level + Factor
   Margin value = Emission level – Limit value
2. 2427 MHz: Fundamental frequency.
3. The emission levels of other frequencies were very low against the limit.

EUT Test Condition		Measurement Detail	
Channel	Channel 5	**Frequency Range**	1 GHz ~ 25 GHz
Input Power	120 Vac, 60 Hz	**Detector Function**	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	**Tested By**	Thomas Wei

Horizontal



Vertical



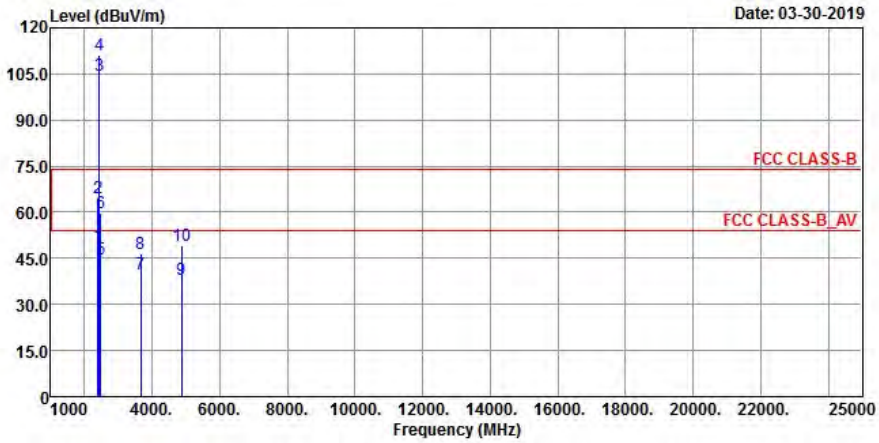
Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2389.8	50.96	55.96	-5	54	-3.04	248	318	Average
2389.8	65.86	70.86	-5	74	-8.14	248	318	Peak
2432	104.59	109.56	-4.97			248	318	Average
2432	110.87	115.84	-4.97			248	318	Peak
2484	42.91	47.76	-4.85	54	-11.09	248	318	Average
2484	54.77	59.62	-4.85	74	-19.23	248	318	Peak
3648	39.01	57.05	-18.04	54	-14.99	123	155	Average
3648	47.21	65.25	-18.04	74	-26.79	123	155	Peak
4864	38.55	52.72	-14.17	54	-15.45	211	185	Average
4864	48.88	63.05	-14.17	74	-25.12	211	185	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2389.94	51.97	56.97	-5	54	-2.03	136	131	Average
2389.94	66.27	71.27	-5	74	-7.73	136	131	Peak
2432	105.95	110.92	-4.97			136	131	Average
2432	112.74	117.71	-4.97			136	131	Peak
2483.52	44.51	49.36	-4.85	54	-9.49	136	131	Average
2483.52	56.15	61	-4.85	74	-17.85	136	131	Peak
3648	37.04	55.08	-18.04	54	-16.96	104	167	Average
3648	45.11	63.15	-18.04	74	-28.89	104	167	Peak
4864	35.91	50.08	-14.17	54	-18.09	174	162	Average
4864	45.34	59.51	-14.17	74	-28.66	174	162	Peak

Remarks:

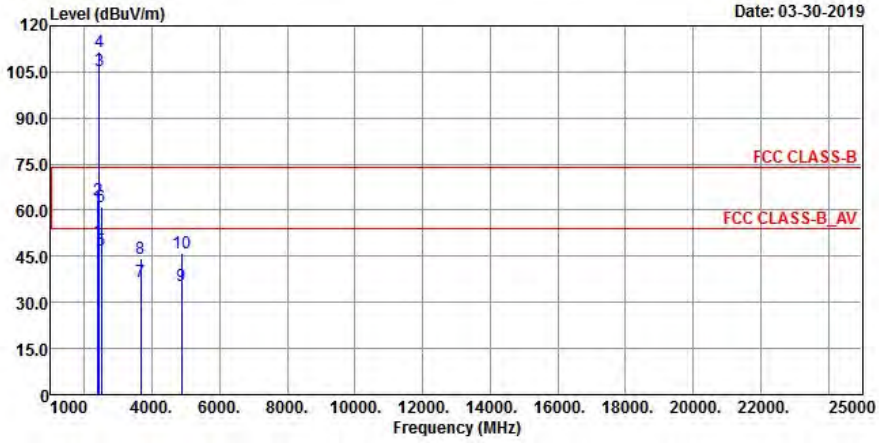
1. Emission Level = Read Level + Factor
   Margin value = Emission level – Limit value
2. 2432 MHz: Fundamental frequency.
3. The emission levels of other frequencies were very low against the limit.

EUT Test Condition		Measurement Detail	
Channel	Channel 6	**Frequency Range**	1 GHz ~ 25 GHz
Input Power	120 Vac, 60 Hz	**Detector Function**	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	**Tested By**	Thomas Wei

Horizontal



Vertical



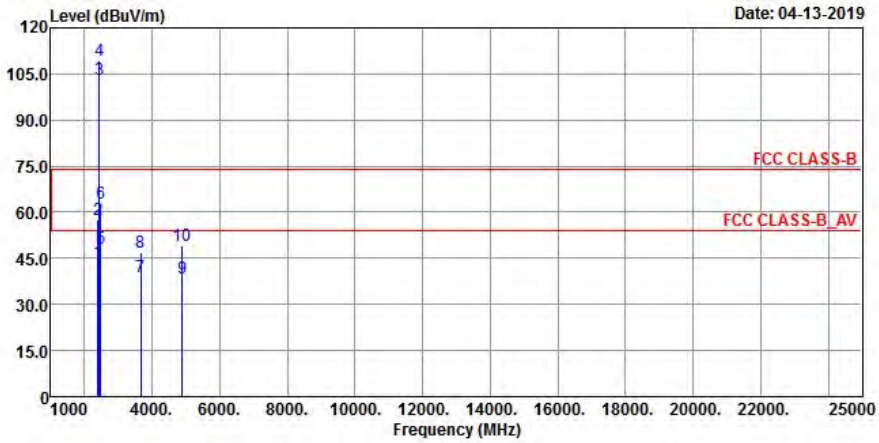
Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2389.94	49.32	54.32	-5	54	-4.68	272	305	Average
2389.94	64.7	69.7	-5	74	-9.3	272	305	Peak
2437	104.48	109.46	-4.98			272	305	Average
2437	110.96	115.94	-4.98	74	36.96	272	305	Peak
2483.52	44.81	49.66	-4.85	54	-9.19	272	305	Average
2483.52	59.62	64.47	-4.85	74	-14.38	272	305	Peak
3655.5	40.07	58.11	-18.04	54	-13.93	166	161	Average
3655.5	46.56	64.6	-18.04	74	-27.44	166	161	Peak
4874	38.14	52.22	-14.08	54	-15.86	203	195	Average
4874	48.94	63.02	-14.08	74	-25.06	203	195	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2389.66	50.11	55.09	-4.98	54	-3.89	137	92	Average
2389.66	63.44	68.42	-4.98	74	-10.56	137	92	Peak
2437	105.18	110.16	-4.98			137	92	Average
2437	111.5	116.48	-4.98			137	92	Peak
2484.44	47.13	51.98	-4.85	54	-6.87	137	92	Average
2484.44	61.23	66.08	-4.85	74	-12.77	137	92	Peak
3655.5	36.8	54.84	-18.04	54	-17.2	160	179	Average
3655.5	44.17	62.21	-18.04	74	-29.83	160	179	Peak
4874	35.58	49.66	-14.08	54	-18.42	235	138	Average
4874	46.06	60.14	-14.08	74	-27.94	235	138	Peak

Remarks:

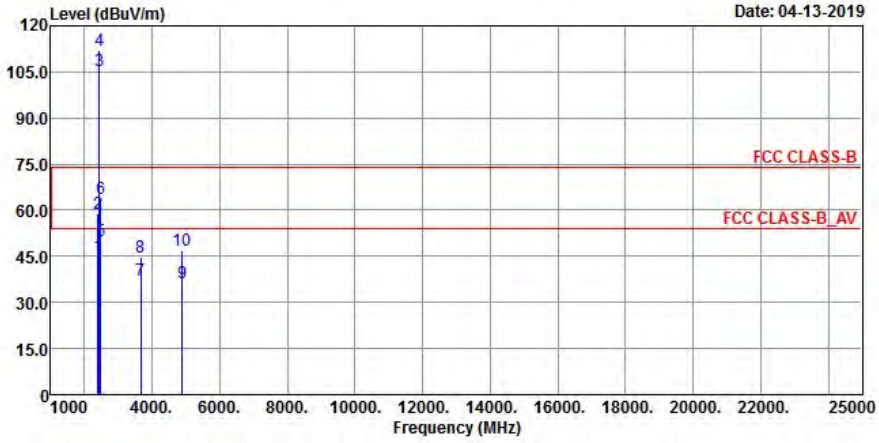
1. Emission Level = Read Level + Factor
   Margin value = Emission level – Limit value
2. 2437 MHz: Fundamental frequency.
3. The emission levels of other frequencies were very low against the limit.

EUT Test Condition		Measurement Detail	
Channel	Channel 7	**Frequency Range**	1 GHz ~ 25 GHz
Input Power	120 Vac, 60 Hz	**Detector Function**	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	**Tested By**	Thomas Wei

Horizontal



Vertical



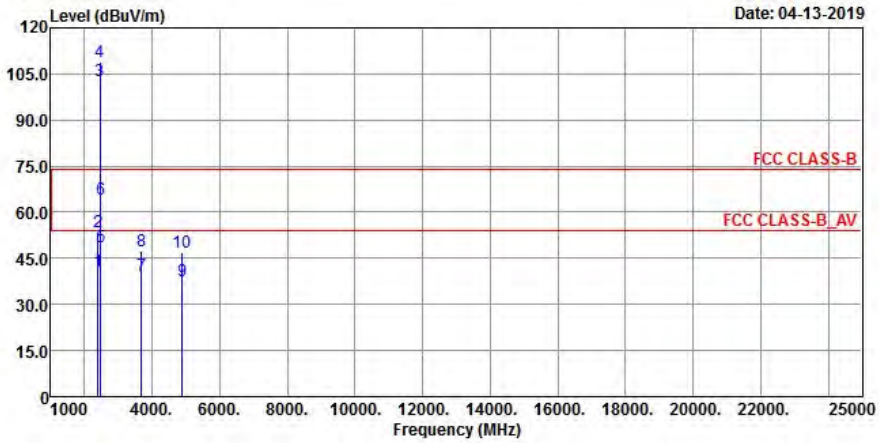
Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2389.8	44.04	49.04	-5	54	-9.96	236	312	Average
2389.8	57.61	62.61	-5	74	-16.39	236	312	Peak
2442	103.28	108.19	-4.91			236	312	Average
2442	109.54	114.45	-4.91			236	312	Peak
2483.56	48.45	53.3	-4.85	54	-5.55	236	312	Average
2483.56	62.9	67.75	-4.85	74	-11.1	236	312	Peak
3663	39.05	57.04	-17.99	54	-14.95	100	155	Average
3663	47.04	65.03	-17.99	74	-26.96	100	155	Peak
4884	38.59	52.67	-14.08	54	-15.41	156	139	Average
4884	49.37	63.45	-14.08	74	-24.63	156	139	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2389.94	45.34	50.34	-5	54	-8.66	101	135	Average
2389.94	58.95	63.95	-5	74	-15.05	101	135	Peak
2442	105.19	110.1	-4.91			101	135	Average
2442	111.99	116.9	-4.91			101	135	Peak
2483.72	50.09	54.94	-4.85	54	-3.91	101	135	Average
2483.72	63.92	68.77	-4.85	74	-10.08	101	135	Peak
3663	37.06	55.05	-17.99	54	-16.94	102	167	Average
3663	44.89	62.88	-17.99	74	-29.11	102	167	Peak
4884	36.4	50.48	-14.08	54	-17.6	173	159	Average
4884	46.79	60.87	-14.08	74	-27.21	173	159	Peak

Remarks:

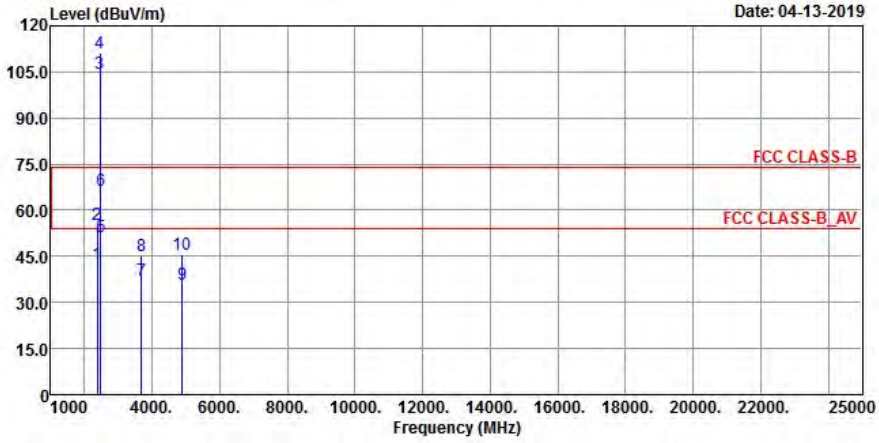
1. Emission Level = Read Level + Factor
   Margin value = Emission level – Limit value
2. 2442 MHz: Fundamental frequency.
3. The emission levels of other frequencies were very low against the limit.

EUT Test Condition		Measurement Detail	
Channel	Channel 8	**Frequency Range**	1 GHz ~ 25 GHz
Input Power	120 Vac, 60 Hz	**Detector Function**	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	**Tested By**	Thomas Wei

Horizontal



Vertical



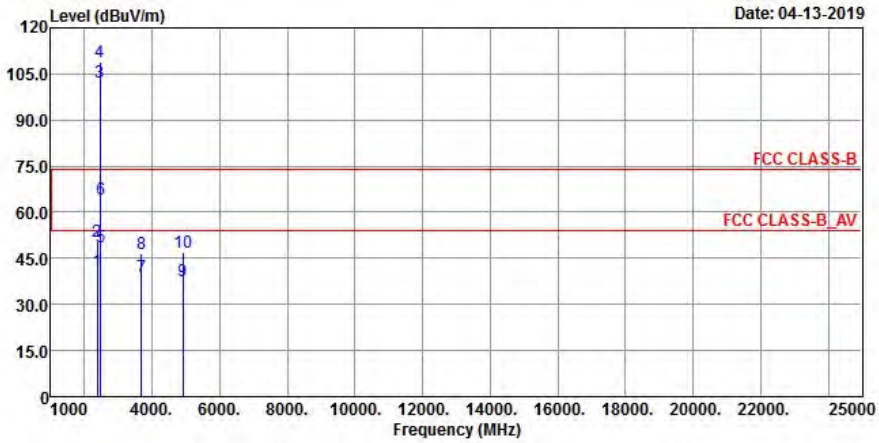
Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2389.52	40.9	45.88	-4.98	54	-13.1	236	312	Average
2389.52	53.76	58.74	-4.98	74	-20.24	236	312	Peak
2447	102.74	107.65	-4.91			236	312	Average
2447	109.02	113.93	-4.91			236	312	Peak
2483.52	48.78	53.63	-4.85	54	-5.22	236	312	Average
2483.52	64.14	68.99	-4.85	74	-9.86	236	312	Peak
3670.5	39.62	57.61	-17.99	54	-14.38	100	154	Average
3670.5	47.47	65.46	-17.99	74	-26.53	100	154	Peak
4894	37.78	51.77	-13.99	54	-16.22	136	195	Average
4894	46.76	60.75	-13.99	74	-27.24	136	195	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2371.74	42.32	47.21	-4.89	54	-11.68	129	138	Average
2371.74	55.14	60.03	-4.89	74	-18.86	129	138	Peak
2447	104.34	109.25	-4.91			129	138	Average
2447	111.09	116	-4.91			129	138	Peak
2483.72	51.32	56.17	-4.85	54	-2.68	129	138	Average
2483.72	66.35	71.2	-4.85	74	-7.65	129	138	Peak
3670.5	37.3	55.29	-17.99	54	-16.7	104	169	Average
3670.5	45.01	63	-17.99	74	-28.99	104	169	Peak
4894	35.94	49.93	-13.99	54	-18.06	191	136	Average
4894	45.8	59.79	-13.99	74	-28.2	191	136	Peak

Remarks:

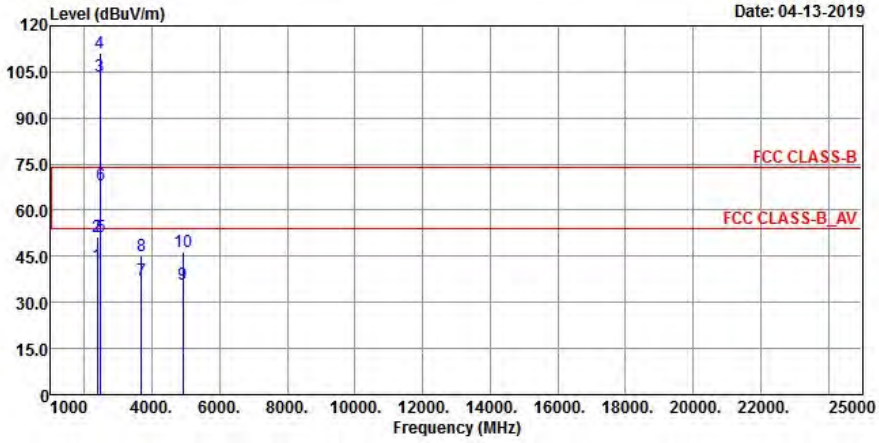
1. Emission Level = Read Level + Factor
   Margin value = Emission level – Limit value
2. 2447 MHz: Fundamental frequency.
3. The emission levels of other frequencies were very low against the limit.

EUT Test Condition		Measurement Detail	
Channel	Channel 9	**Frequency Range**	1 GHz ~ 25 GHz
Input Power	120 Vac, 60 Hz	**Detector Function**	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	**Tested By**	Thomas Wei

Horizontal



Vertical



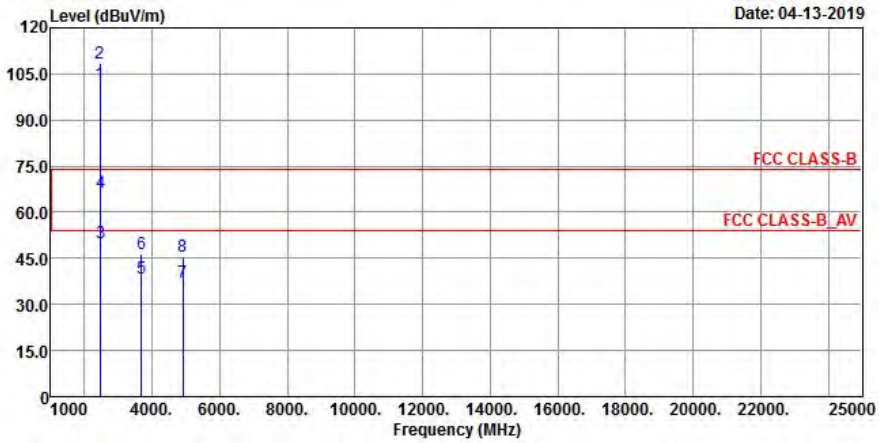
Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2377.76	40.66	45.55	-4.89	54	-13.34	239	312	Average
2377.76	50.61	55.5	-4.89	74	-23.39	239	312	Peak
2452	102.19	107.1	-4.91			239	312	Average
2452	109.15	114.06	-4.91			239	312	Peak
2483.68	48.6	53.45	-4.85	54	-5.4	239	312	Average
2483.68	64.25	69.1	-4.85	74	-9.75	239	312	Peak
3678	39.06	57	-17.94	54	-14.94	100	155	Average
3678	46.61	64.55	-17.94	74	-27.39	100	155	Peak
4904	37.47	51.45	-13.98	54	-16.53	189	161	Average
4904	46.91	60.89	-13.98	74	-27.09	189	161	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2376.36	42.11	47	-4.89	54	-11.89	130	139	Average
2376.36	51.32	56.21	-4.89	74	-22.68	130	139	Peak
2452	103.54	108.45	-4.91			130	139	Average
2452	111.15	116.06	-4.91			130	139	Peak
2483.68	51.58	56.43	-4.85	54	-2.42	130	139	Average
2483.68	68.32	73.17	-4.85	74	-5.68	130	139	Peak
3678	37.03	54.97	-17.94	54	-16.97	105	165	Average
3678	45.06	63	-17.94	74	-28.94	105	165	Peak
4904	35.78	49.76	-13.98	54	-18.22	152	103	Average
4904	46.33	60.31	-13.98	74	-27.67	152	103	Peak

Remarks:

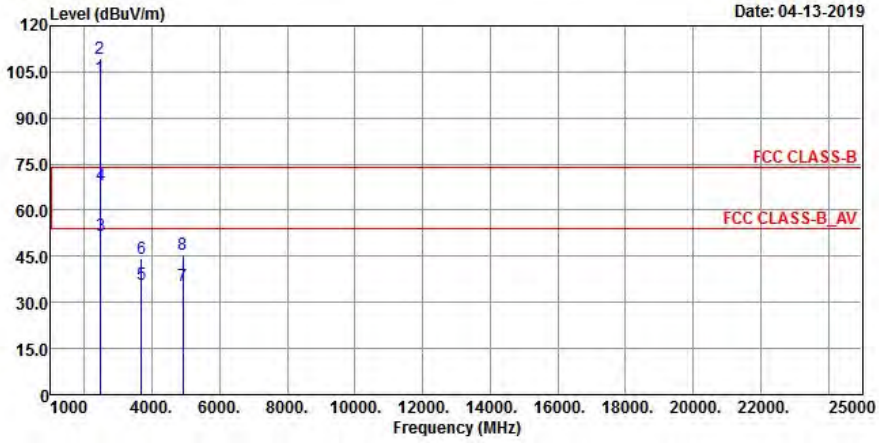
1. Emission Level = Read Level + Factor
   Margin value = Emission level – Limit value
2. 2452 MHz: Fundamental frequency.
3. The emission levels of other frequencies were very low against the limit.

EUT Test Condition		Measurement Detail	
Channel	Channel 10	**Frequency Range**	1 GHz ~ 25 GHz
Input Power	120 Vac, 60 Hz	**Detector Function**	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	**Tested By**	Thomas Wei

Horizontal



Vertical



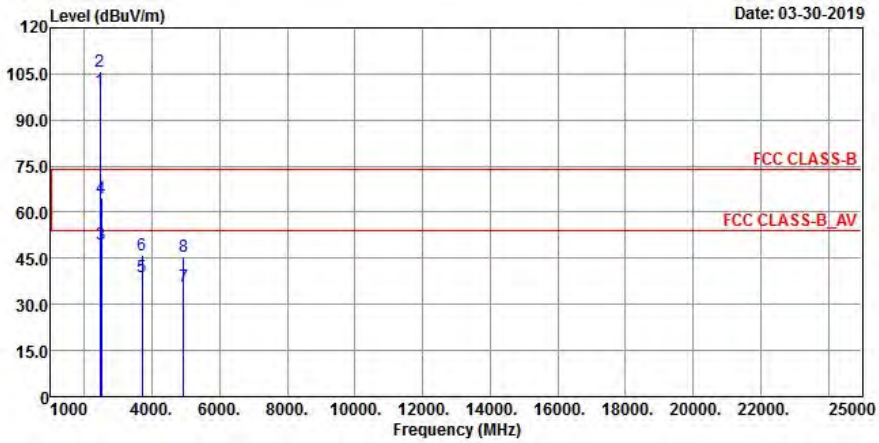
Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2457	101.99	106.9	-4.91			238	313	Average
2457	108.29	113.2	-4.91			238	313	Peak
2483.6	50.14	54.99	-4.85	54	-3.86	238	313	Average
2483.6	66.57	71.42	-4.85	74	-7.43	238	313	Peak
3685.5	38.47	56.41	-17.94	54	-15.53	100	152	Average
3685.5	46.61	64.55	-17.94	74	-27.39	100	152	Peak
4914	37.26	51.24	-13.98	54	-16.74	132	251	Average
4914	45.77	59.75	-13.98	74	-28.23	132	251	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2457	103.34	108.25	-4.91			100	138	Average
2457	109.54	114.45	-4.91			100	138	Peak
2483.52	51.76	56.61	-4.85	54	-2.24	100	138	Average
2483.52	68.01	72.86	-4.85	74	-5.99	100	138	Peak
3685.5	36.07	54.01	-17.94	54	-17.93	109	168	Average
3685.5	44.47	62.41	-17.94	74	-29.53	109	168	Peak
4914	35.39	49.37	-13.98	54	-18.61	165	157	Average
4914	45.55	59.53	-13.98	74	-28.45	165	157	Peak

Remarks:

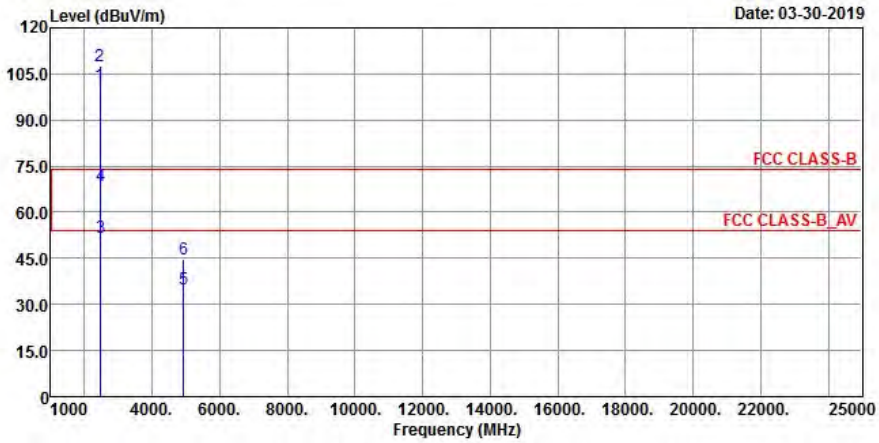
1. Emission Level = Read Level + Factor
   Margin value = Emission level – Limit value
2. 2457 MHz: Fundamental frequency.
3. The emission levels of other frequencies were very low against the limit.

EUT Test Condition		Measurement Detail	
Channel	Channel 11	**Frequency Range**	1 GHz ~ 25 GHz
Input Power	120 Vac, 60 Hz	**Detector Function**	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	**Tested By**	Thomas Wei

Horizontal



Vertical



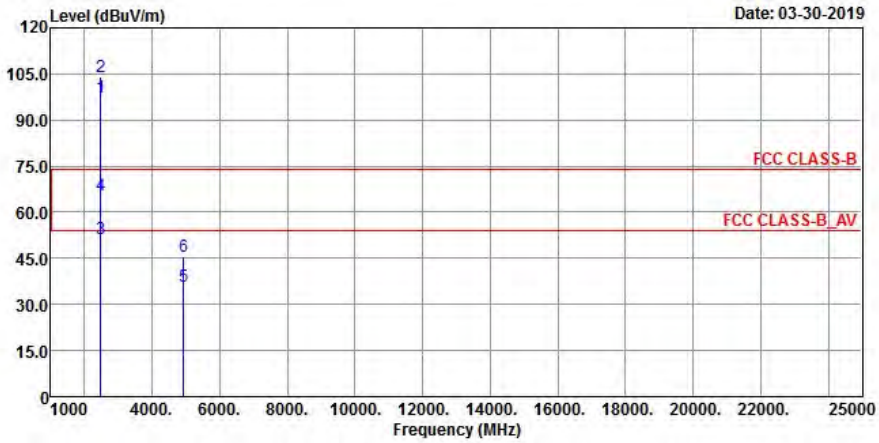
Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2462	99.58	104.49	-4.91			256	308	Average
2462	105.72	110.63	-4.91			256	308	Peak
2484.12	49.76	54.61	-4.85	54	-4.24	256	308	Average
2484.12	64.53	69.38	-4.85	74	-9.47	256	308	Peak
3693	39.16	57.1	-17.94	54	-14.84	165	162	Average
3693	46.06	64	-17.94	74	-27.94	165	162	Peak
4924	35.67	49.63	-13.96	54	-18.33	149	255	Average
4924	45.62	59.58	-13.96	74	-28.38	149	255	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2462	101.21	106.12	-4.91			166	88	Average
2462	107.47	112.38	-4.91			166	88	Peak
2483.52	51.6	56.45	-4.85	54	-2.4	166	88	Average
2483.52	68.45	73.3	-4.85	74	-5.55	166	88	Peak
4924	35.1	49.06	-13.96	54	-18.9	175	203	Average
4924	44.66	58.62	-13.96	74	-29.34	175	203	Peak

Remarks:

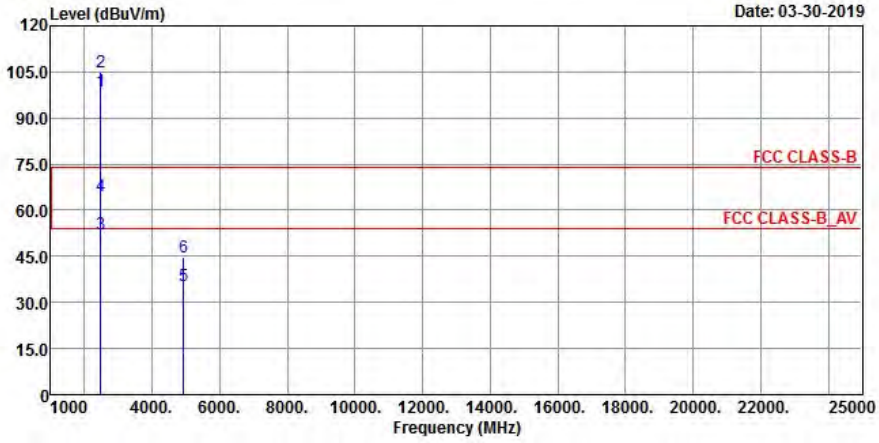
1. Emission Level = Read Level + Factor
   Margin value = Emission level – Limit value
2. 2462 MHz: Fundamental frequency.
3. The emission levels of other frequencies were very low against the limit.

EUT Test Condition		Measurement Detail	
Channel	Channel 12	**Frequency Range**	1 GHz ~ 25 GHz
Input Power	120 Vac, 60 Hz	**Detector Function**	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	**Tested By**	Thomas Wei

Horizontal



Vertical



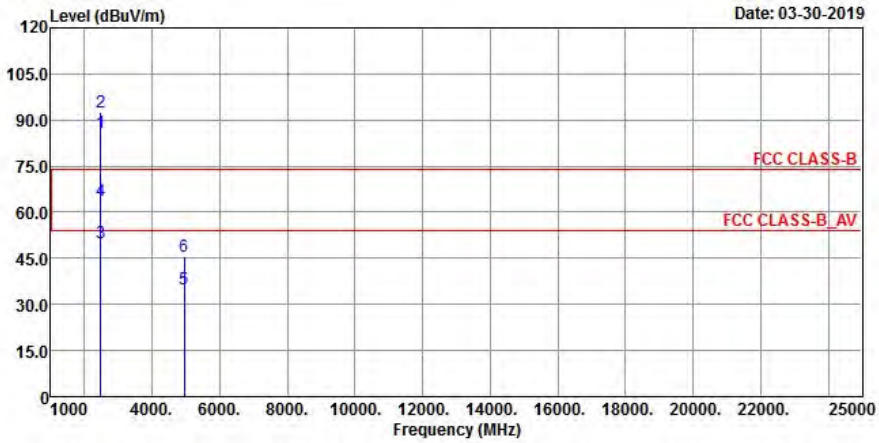
Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2467	97.58	102.42	-4.84			234	309	Average
2467	103.85	108.69	-4.84			234	309	Peak
2483.56	51.23	56.08	-4.85	54	-2.77	234	309	Average
2483.56	65.45	70.3	-4.85	74	-8.55	234	309	Peak
4934	35.81	49.77	-13.96	54	-18.19	154	190	Average
4934	45.41	59.37	-13.96	74	-28.59	154	190	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2467	98.72	103.56	-4.84			179	86	Average
2467	104.73	109.57	-4.84			179	86	Peak
2483.56	52.41	57.26	-4.85	54	-1.59	179	86	Average
2483.56	64.72	69.57	-4.85	74	-9.28	179	86	Peak
4934	35.44	49.4	-13.96	54	-18.56	182	231	Average
4934	44.62	58.58	-13.96	74	-29.38	182	231	Peak

Remarks:

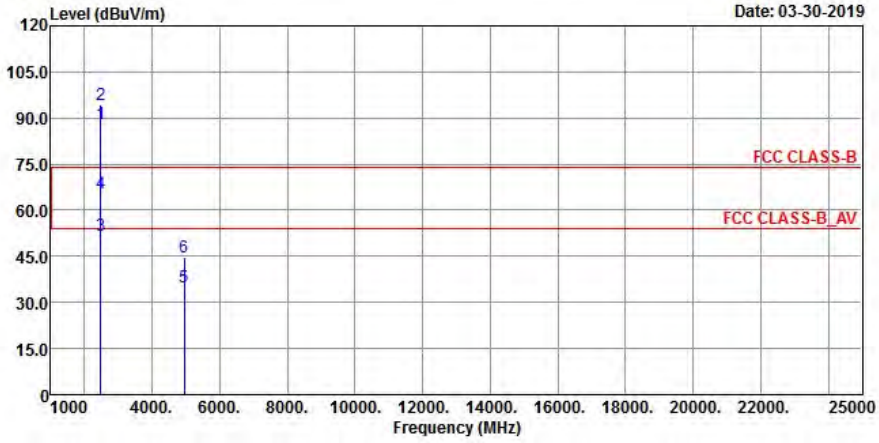
1. Emission Level = Read Level + Factor
   Margin value = Emission level – Limit value
2. 2467 MHz: Fundamental frequency.
3. The emission levels of other frequencies were very low against the limit.

EUT Test Condition		Measurement Detail	
Channel	Channel 13	**Frequency Range**	1 GHz ~ 25 GHz
Input Power	120 Vac, 60 Hz	**Detector Function**	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	**Tested By**	Thomas Wei

Horizontal



Vertical



Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2472	85.93	90.78	-4.85			258	312	Average
2472	92.43	97.28	-4.85			258	312	Peak
2483.52	49.87	54.72	-4.85	54	-4.13	258	312	Average
2483.52	63.76	68.61	-4.85	74	-10.24	258	312	Peak
4944	35.08	49.03	-13.95	54	-18.92	142	318	Average
4944	45.41	59.36	-13.95	74	-28.59	142	318	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2472	88.07	92.92	-4.85			180	86	Average
2472	94.16	99.01	-4.85			180	86	Peak
2483.52	51.94	56.79	-4.85	54	-2.06	180	86	Average
2483.52	65.49	70.34	-4.85	74	-8.51	180	86	Peak
4944	34.83	48.78	-13.95	54	-19.17	159	261	Average
4944	44.88	58.83	-13.95	74	-29.12	159	261	Peak

Remarks:

1. Emission Level = Read Level + Factor
   Margin value = Emission level – Limit value
2. 2472 MHz: Fundamental frequency.
3. The emission levels of other frequencies were very low against the limit.

9 kHz ~ 30 MHz Data:

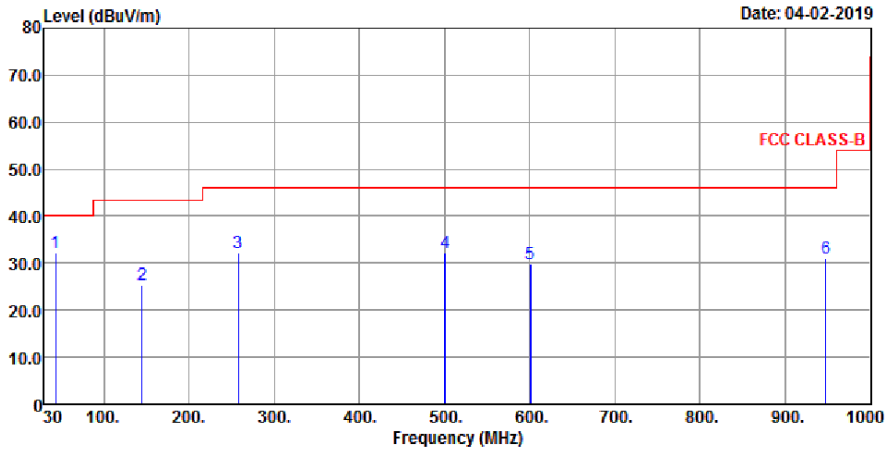
The amplitude of spurious emissions attenuated more than 20 dB below the permissible value is not required to be report.

30 MHz ~ 1 GHz Worst-Case Data:

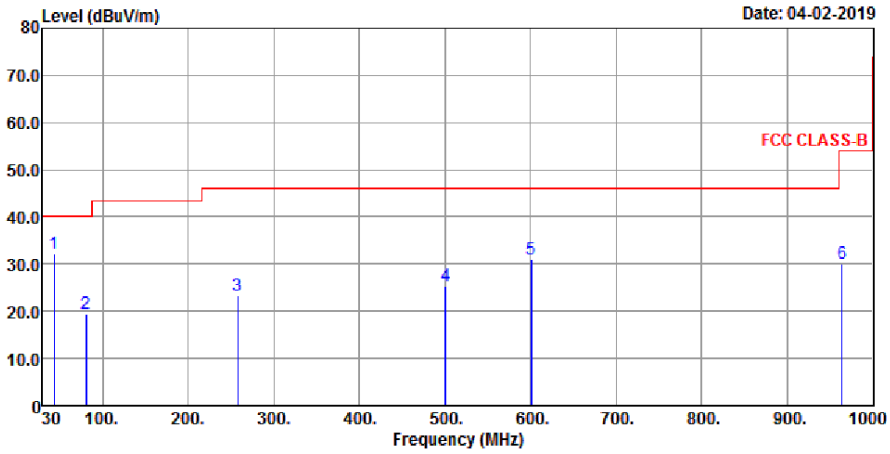
802.11g

EUT Test Condition		Measurement Detail	
Channel	Channel 1	**Frequency Range**	30 MHz ~ 1 GHz
Input Power	120 Vac, 60 Hz	**Detector Function**	Peak (PK) Quasi-peak (QP)
Environmental Conditions	25 deg. C, 65 % RH	**Tested By**	Thomas Wei

Horizontal



Vertical



Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
43.58	32.19	49.14	-16.95	40	-7.81	136	157	Peak
144.46	25.38	42.91	-17.53	43.5	-18.12	161	184	Peak
257.95	32.24	49.67	-17.43	46	-13.76	195	221	Peak
500.45	32.05	42.56	-10.51	46	-13.95	219	248	Peak
600.36	29.78	38.07	-8.29	46	-16.22	252	278	Peak
947.62	30.86	33.67	-2.81	46	-15.14	286	307	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
43.58	32.18	49.13	-16.95	40	-7.82	128	144	Peak
80.44	19.47	41	-21.53	40	-20.53	167	185	Peak
257.95	23.45	40.88	-17.43	46	-22.55	194	203	Peak
500.45	25.45	35.96	-10.51	46	-20.55	226	241	Peak
600.36	31.02	39.31	-8.29	46	-14.98	264	277	Peak
964.11	30.16	33.24	-3.08	54	-23.84	298	300	Peak

Remarks:

1. Emission Level = Read Level + Factor
   Margin value = Emission level – Limit value.
2. The emission levels of other frequencies were very low against the limit.

4.2 Conducted Emission Measurement

4.2.1 Limits of Conducted Emission Measurement

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

Note: 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.

4.2.2 Test Instruments

Description & Manufacturer	Model No.	Serial No.	Date of Calibration	Due Date of Calibration
Test Receiver ROHDE & SCHWARZ	ESCS 30	100288	Jan. 03, 2019	Jan. 02, 2020
RF signal cable Woken	5D-FB	Cable-cond1-01	Sep. 05, 2018	Sep. 04, 2019
LISN ROHDE & SCHWARZ (EUT)	ENV216	101826	Feb. 21, 2019	Feb. 20, 2020
LISN ROHDE & SCHWARZ (Peripheral)	ESH3-Z5	100311	Aug. 19, 2018	Aug. 18, 2019
Software ADT	BV ADT_Cond_ V7.3.7.4	NA	NA	NA

Note: 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in HwaYa Shielded Room 1.
3. The VCCI Site Registration No. is C-12040.

4.2.3 Test Procedures

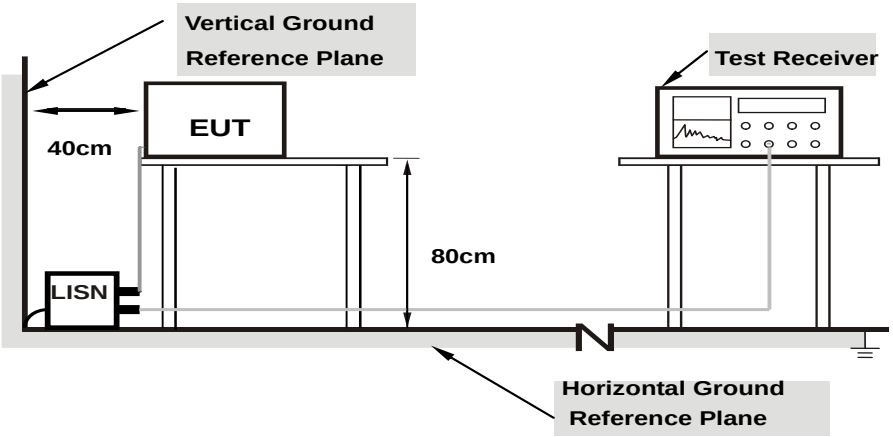
a. The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/50 uH of coupling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

4.2.4 Deviation from Test Standard

No deviation.

4.2.5 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).

4.2.6 EUT Operating Conditions

a. Placed the EUT on a testing table.
b. Use the software to control the EUT under transmission condition continuously at specific channel frequency.

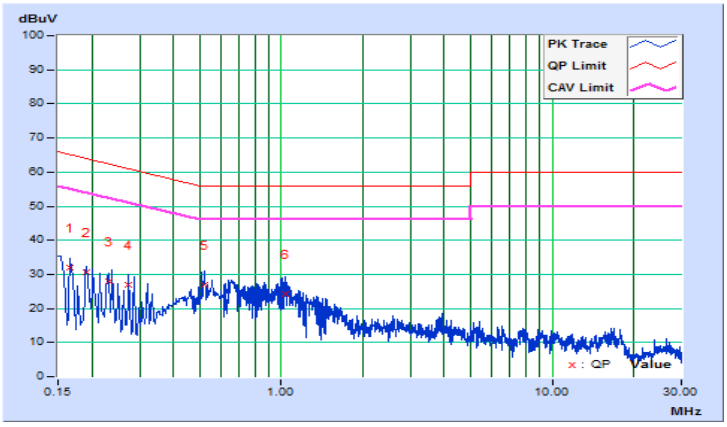
4.2.7 Test Results

Frequency Range	150kHz ~ 30MHz	Detector Function & Resolution Bandwidth	Quasi-Peak (QP) / Average (AV), 9kHz
Input Power	120Vac, 60Hz	Environmental Conditions	25℃, 65%RH
Tested by	Jisyong Wang	Test Date	2019/3/31

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	0.16600	0.10	31.83	14.80	31.93	14.90	65.16	55.16	-33.23	-40.26
2	0.19013	0.10	30.50	14.10	30.60	14.20	64.03	54.03	-33.43	-39.83
3	0.23000	0.10	27.82	11.26	27.92	11.36	62.45	52.45	-34.53	-41.09
4	0.27400	0.10	26.94	10.67	27.04	10.77	61.00	51.00	-33.96	-40.23
5	**0.52200**	**0.11**	**26.78**	**10.74**	**26.89**	**10.85**	**56.00**	**46.00**	**-29.11**	**-35.15**
6	1.03800	0.11	24.24	10.87	24.35	10.98	56.00	46.00	-31.65	-35.02

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

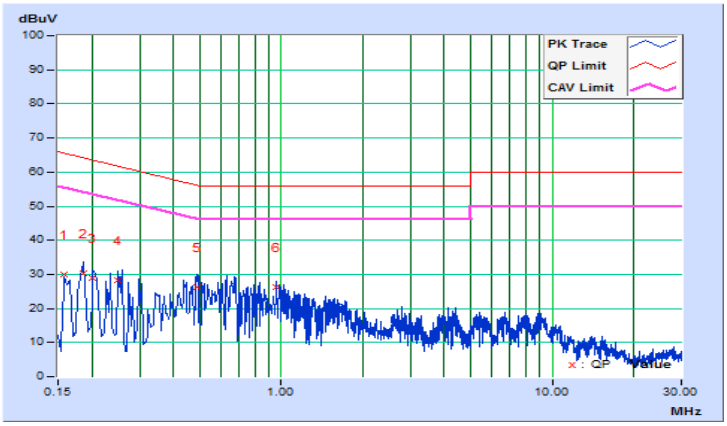


Frequency Range	150kHz ~ 30MHz	Detector Function & Resolution Bandwidth	Quasi-Peak (QP) / Average (AV), 9kHz
Input Power	120Vac, 60Hz	Environmental Conditions	25℃, 65%RH
Tested by	Jisyong Wang	Test Date	2019/3/31

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	0.15811	0.09	29.93	9.26	30.02	9.35	65.56	55.56	-35.54	-46.21
2	0.18600	0.09	30.31	12.43	30.40	12.52	64.21	54.21	-33.81	-41.69
3	0.20201	0.09	28.92	10.70	29.01	10.79	63.53	53.53	-34.52	-42.74
4	0.25006	0.09	28.16	10.99	28.25	11.08	61.76	51.76	-33.51	-40.68
5	0.48600	0.10	26.06	10.90	26.16	11.00	56.24	46.24	-30.08	-35.24
6	0.96200	0.09	26.15	10.48	26.24	10.57	56.00	46.00	-29.76	-35.43

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

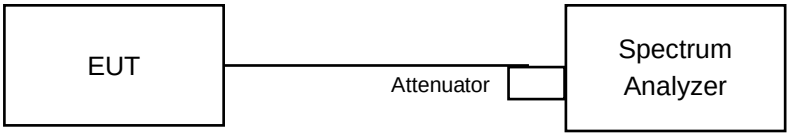


4.3 6 dB Bandwidth Measurement

4.3.1 Limits of 6 dB Bandwidth Measurement

The minimum of 6 dB Bandwidth Measurement is 0.5 MHz.

4.3.2 Test Setup



4.3.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.3.4 Test Procedure

a. Set resolution bandwidth (RBW) = 100 kHz
b. Set the video bandwidth (VBW) ≥ 3 x RBW, Detector = Peak.
c. Trace mode = max hold.
d. Sweep = auto couple.
e. 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

4.3.5 Deviation from Test Standard

No deviation.

4.3.6 EUT Operating Conditions

The software provided by client to enable the EUT under transmission condition continuously at lowest, middle and highest channel frequencies individually.

4.3.7 Test Results

802.11b

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)	Pass / Fail
1	2412	8.11	0.5	Pass
6	2437	8.56	0.5	Pass
11	2462	9.04	0.5	Pass
12	2467	8.11	0.5	Pass
13	2472	8.10	0.5	Pass

802.11g

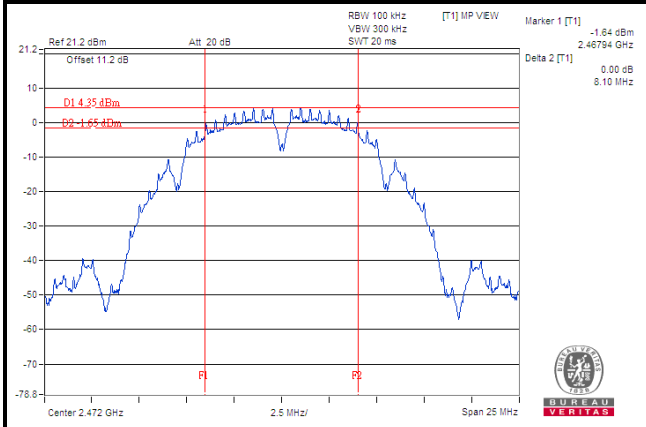
Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)	Pass / Fail
1	2412	16.31	0.5	Pass
6	2437	16.07	0.5	Pass
11	2462	15.51	0.5	Pass
12	2467	16.08	0.5	Pass
13	2472	16.31	0.5	Pass

802.11n (HT20)

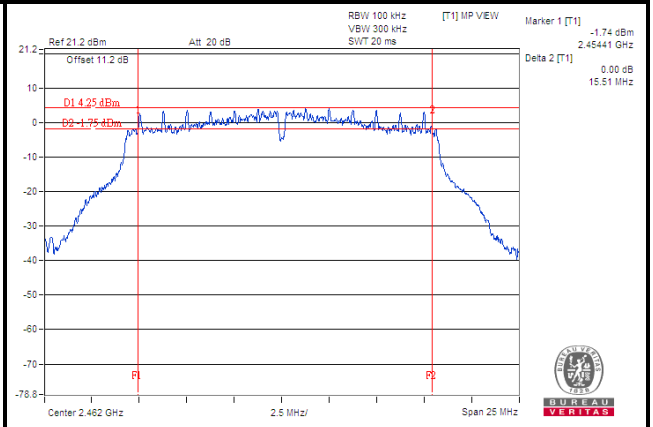
Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)	Pass / Fail
1	2412	16.67	0.5	Pass
6	2437	17.03	0.5	Pass
11	2462	15.78	0.5	Pass
12	2467	17.05	0.5	Pass
13	2472	17.09	0.5	Pass

Spectrum Plot of Worst Value

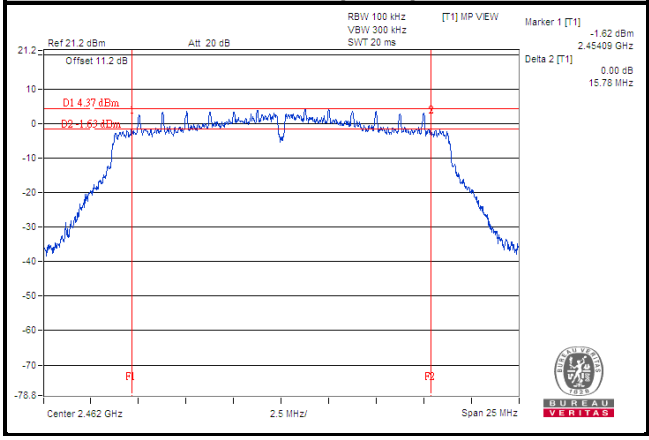
802.11b



802.11g

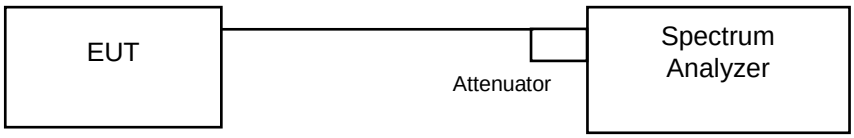


802.11n (HT20)



4.4 Occupied Bandwidth Measurement

4.4.1 Test Setup



4.4.2 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.4.3 Test Procedure

The transmitter output was connected to the spectrum analyzer through an attenuator. The bandwidth of the fundamental frequency was measured by spectrum analyzer with resolution bandwidth in the range of 1 % to 5 % of the anticipated emission bandwidth, and a video bandwidth at least 3x the resolution bandwidth and set the detector to PEAK. The width of a frequency band such that, below the lower and above the upper frequency limits, the mean powers emitted are each equal to a specified percentage 0.5 % of the total mean power of a given emission.

4.4.4 Deviation from Test Standard

No deviation.

4.4.5 EUT Operating Conditions

The software provided by client to enable the EUT under transmission condition continuously at lowest, middle and highest channel frequencies individually.

4.4.6 Test Results

802.11b

Channel	Frequency (MHz)	Occupied Bandwidth (MHz)	Pass / Fail
1	2412	12.00	Pass
6	2437	12.12	Pass
11	2462	12.00	Pass
12	2467	11.76	Pass
13	2472	10.92	Pass

802.11g

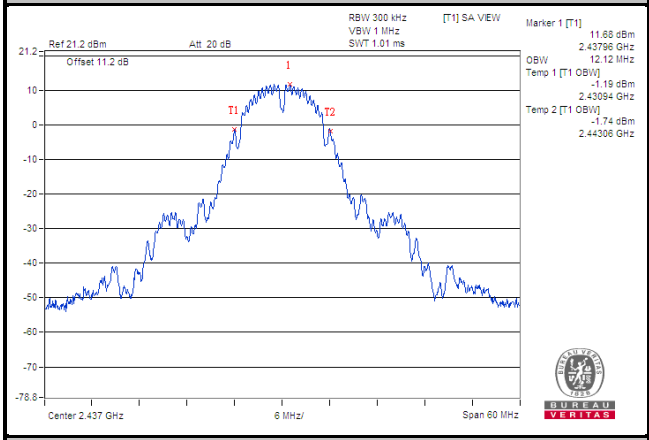
Channel	Frequency (MHz)	Occupied Bandwidth (MHz)	Pass / Fail
1	2412	16.80	Pass
6	2437	17.04	Pass
11	2462	16.68	Pass
12	2467	16.86	Pass
13	2472	16.86	Pass

802.11n (HT20)

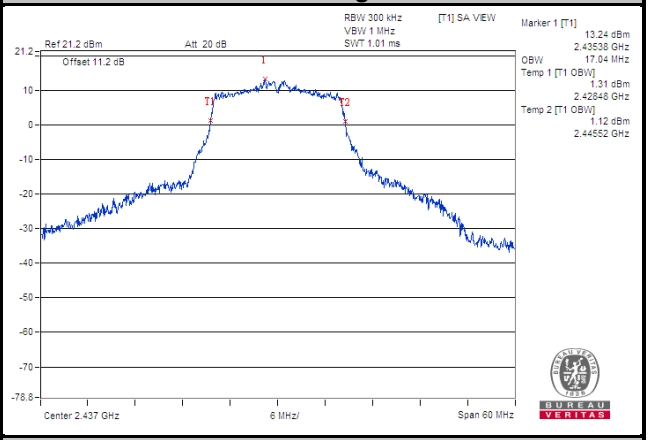
Channel	Frequency (MHz)	Occupied Bandwidth (MHz)	Pass / Fail
1	2412	17.88	Pass
6	2437	18.12	Pass
11	2462	17.82	Pass
12	2467	17.94	Pass
13	2472	17.94	Pass

Spectrum Plot of Worst Value

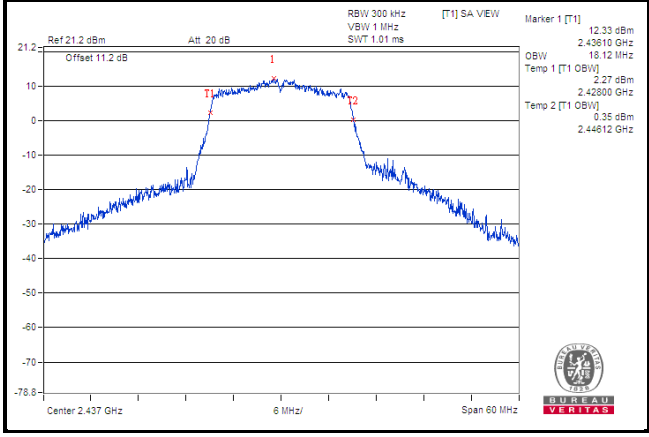
802.11b



802.11g



802.11n (HT20)

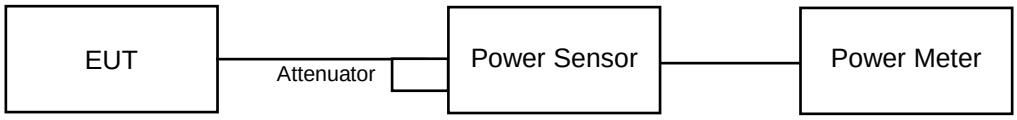


4.5 Conducted Output Power Measurement

4.5.1 Limits of Conducted Output Power Measurement

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

4.5.2 Test Setup



4.5.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.5.4 Test Procedures

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.

4.5.5 Deviation from Test Standard

No deviation.

4.5.6 EUT Operating Conditions

The software provided by client to enable the EUT under transmission condition continuously at lowest, middle and highest channel frequencies individually.

4.5.7 Test Results

802.11b

Channel	Frequency (MHz)	Average Power (mW)	Average Power (dBm)	Limit (dBm)	Pass / Fail
1	2412	70.958	18.51	30	Pass
6	2437	86.099	19.35	30	Pass
11	2462	57.943	17.63	30	Pass
12	2467	38.371	15.84	30	Pass
13	2472	15.101	11.79	30	Pass

802.11g

Channel	Frequency (MHz)	Average Power (mW)	Average Power (dBm)	Limit (dBm)	Pass / Fail
1	2412	31.333	14.96	30	Pass
2	2417	47.206	16.74	30	Pass
3	2422	48.195	16.83	30	Pass
4	2427	60.814	17.84	30	Pass
5	2432	100.925	20.04	30	Pass
6	2437	102.565	20.11	30	Pass
7	2442	95.060	19.78	30	Pass
8	2447	60.954	17.85	30	Pass
9	2452	49.774	16.97	30	Pass
10	2457	38.637	15.87	30	Pass
11	2462	31.696	15.01	30	Pass
12	2467	19.498	12.9	30	Pass
13	2472	1.679	2.25	30	Pass

802.11n (HT20)

Channel	Frequency (MHz)	Average Power (mW)	Average Power (dBm)	Limit (dBm)	Pass / Fail
1	2412	23.014	13.62	30	Pass
2	2417	44.771	16.51	30	Pass
3	2422	54.828	17.39	30	Pass
4	2427	66.834	18.25	30	Pass
5	2432	87.700	19.43	30	Pass
6	2437	90.573	19.57	30	Pass
7	2442	83.946	19.24	30	Pass
8	2447	79.983	19.03	30	Pass
9	2452	66.222	18.21	30	Pass
10	2457	52.845	17.23	30	Pass
11	2462	28.774	14.59	30	Pass
12	2467	18.750	12.73	30	Pass
13	2472	1.517	1.81	30	Pass

4.6 Power Spectral Density Measurement

4.6.1 Limits of Power Spectral Density Measurement

The Maximum of Power Spectral Density Measurement is 8 dBm.

4.6.2 Test Setup

4.6.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.6.4 Test Procedure

a. Set analyzer center frequency to DTS channel center frequency.
b. Set the span to 1.5 times the DTS bandwidth.
c. Set the RBW to: 3 kHz ≤ RBW ≤ 100 kHz.
d. Set the VBW ≥ 3 × RBW.
e. Detector = peak.
f. Sweep time = auto couple.
g. Trace mode = max hold.
h. Allow trace to fully stabilize.
i. Use the peak marker function to determine the maximum amplitude level within the RBW.

4.6.5 Deviation from Test Standard

No deviation.

4.6.6 EUT Operating Condition

The software provided by client to enable the EUT under transmission condition continuously at lowest, middle and highest channel frequencies individually.

4.6.7 Test Results

802.11b

Channel	Frequency (MHz)	PSD (dBm/10 kHz)	Limit (dBm/3 kHz)	Pass / Fail
1	2412	-9.50	8	Pass
6	2437	-8.85	8	Pass
11	2462	-10.56	8	Pass
12	2467	-12.04	8	Pass
13	2472	-15.64	8	Pass

802.11g

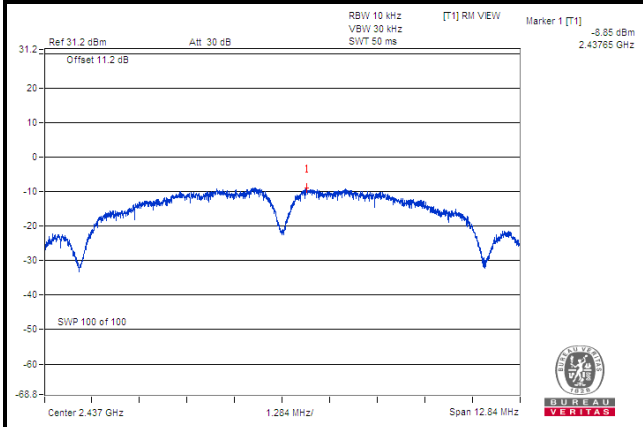
Channel	Frequency (MHz)	PSD (dBm/10 kHz)	Limit (dBm/3 kHz)	Pass / Fail
1	2412	-12.77	8	Pass
6	2437	-7.69	8	Pass
11	2462	-12.41	8	Pass
12	2467	-14.51	8	Pass
13	2472	-26.50	8	Pass

802.11n (HT20)

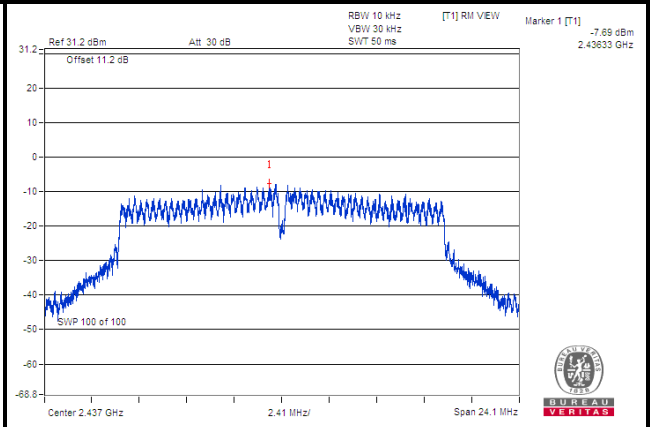
Channel	Frequency (MHz)	PSD (dBm/10 kHz)	Limit (dBm/3 kHz)	Pass / Fail
1	2412	-15.68	8	Pass
6	2437	-9.80	8	Pass
11	2462	-14.45	8	Pass
12	2467	-16.34	8	Pass
13	2472	-26.28	8	Pass

Spectrum Plot of Worst Value

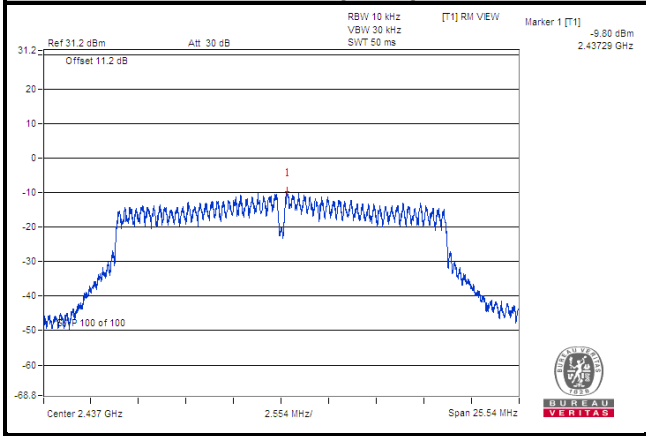
802.11b



802.11g



802.11n (HT20)

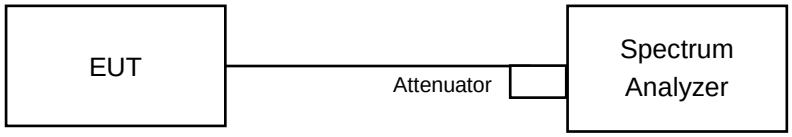


4.7 Conducted Out of Band Emission Measurement

4.7.1 Limits of Conducted Out of Band Emission Measurement

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

4.7.2 Test Setup



4.7.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.7.4 Test Procedure

MEASUREMENT PROCEDURE REF

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

MEASUREMENT PROCEDURE OOBE

1. Set RBW = 100 kHz.
2. Set VBW ≥ 300 kHz.
3. Detector = peak.
4. Sweep = auto couple.
5. Trace Mode = max hold.
6. Allow trace to fully stabilize.
7. Use the peak marker function to determine the maximum amplitude level.

4.7.5 Deviation from Test Standard

No deviation.

4.7.6 EUT Operating Condition

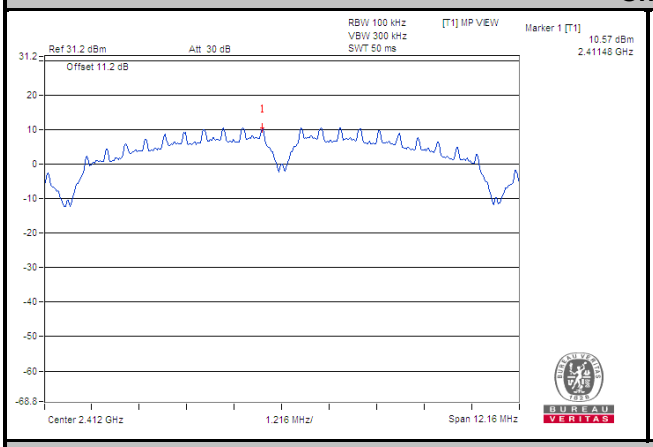
The software provided by client to enable the EUT under transmission condition continuously at lowest, middle and highest channel frequencies individually.

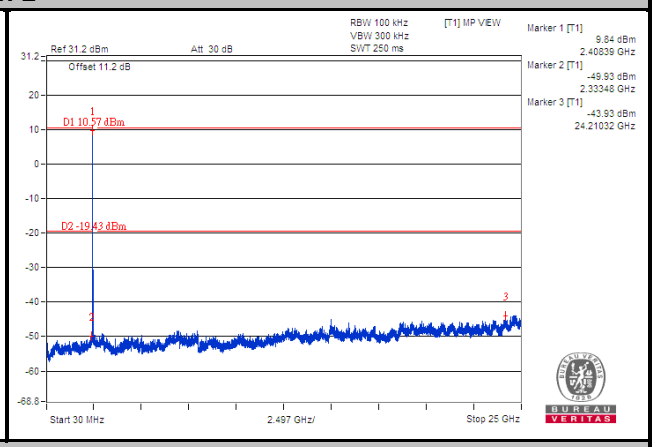
4.7.7 Test Results

The spectrum plots are attached on the following images. D1 line indicates the highest level, and D2 line indicates the 30 dB offset below D1. It shows compliance with the requirement.

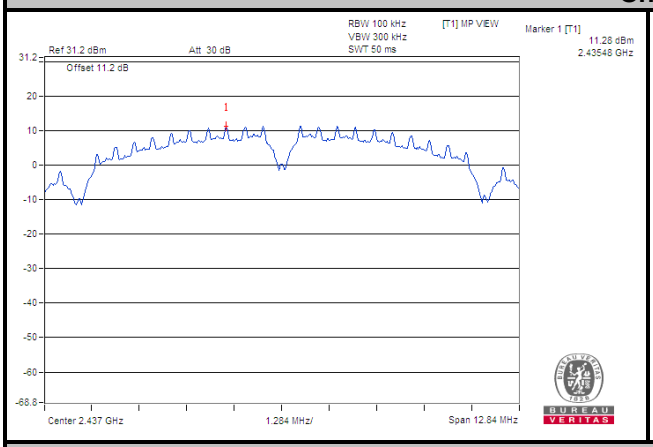
802.11b

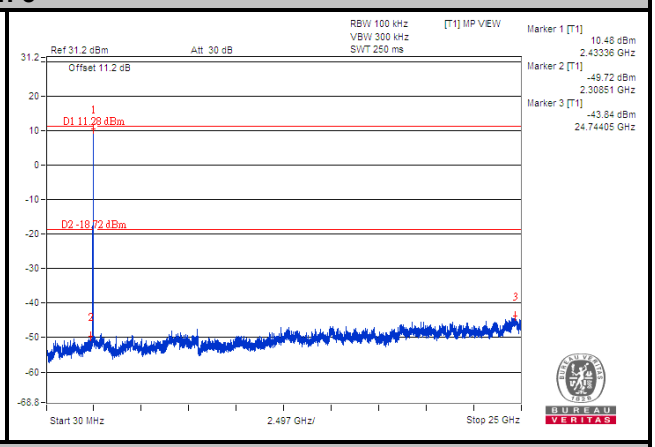
Ch 1



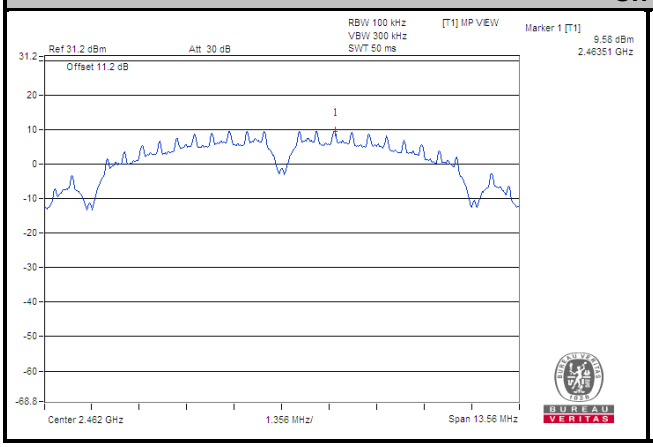


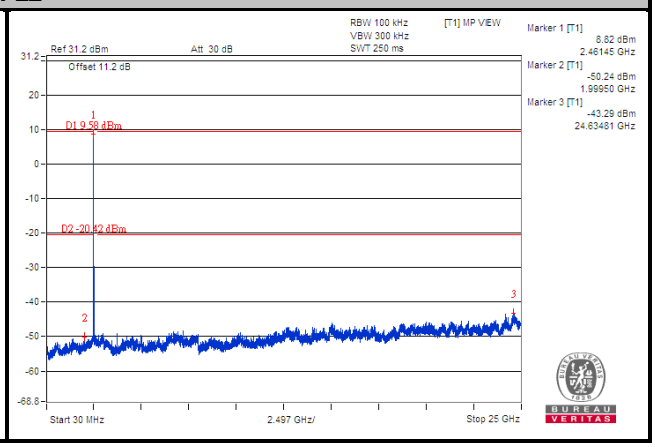
Ch 6



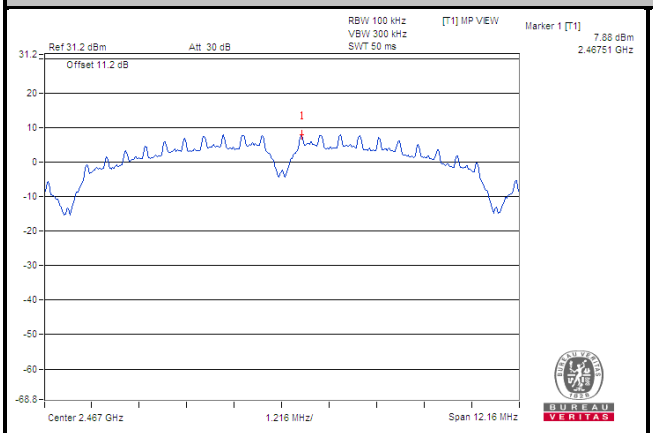


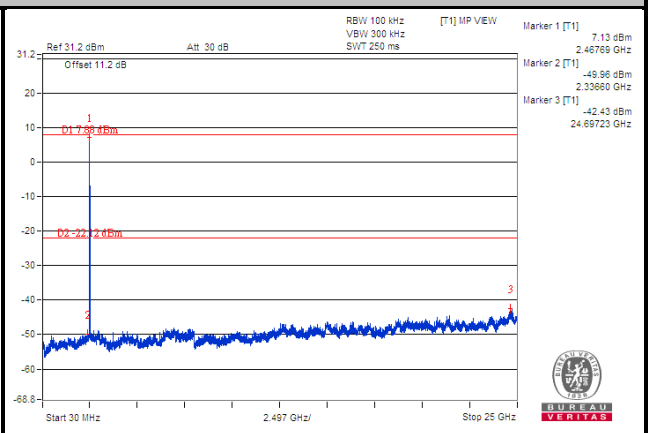
Ch 11



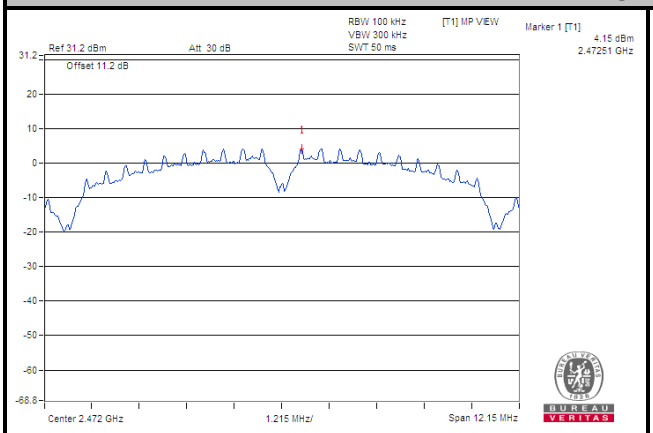


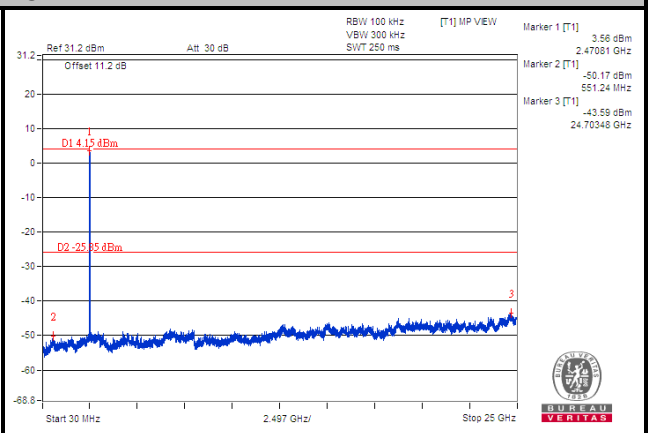
Ch 12



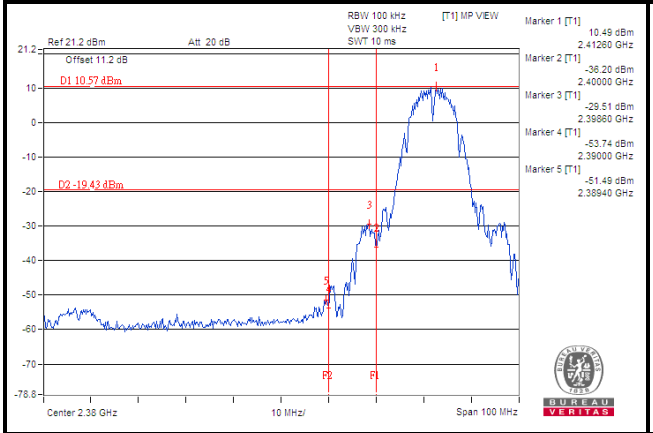


Ch 13

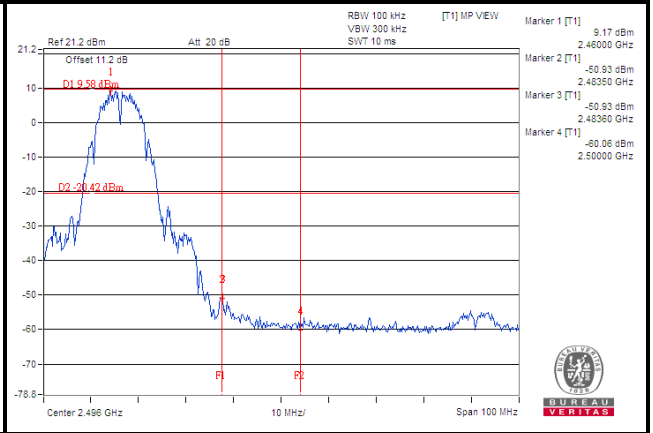




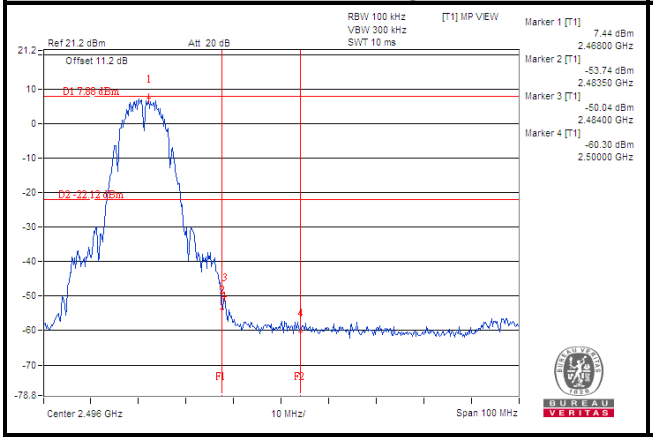
Ch 1 Band Edge



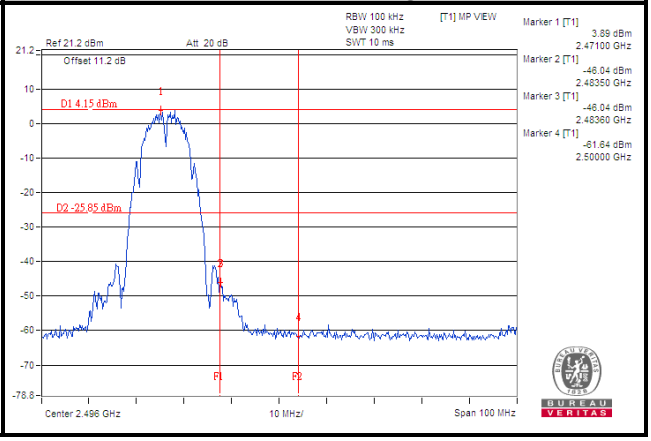
Ch 11 Band Edge



Ch 12 Band Edge

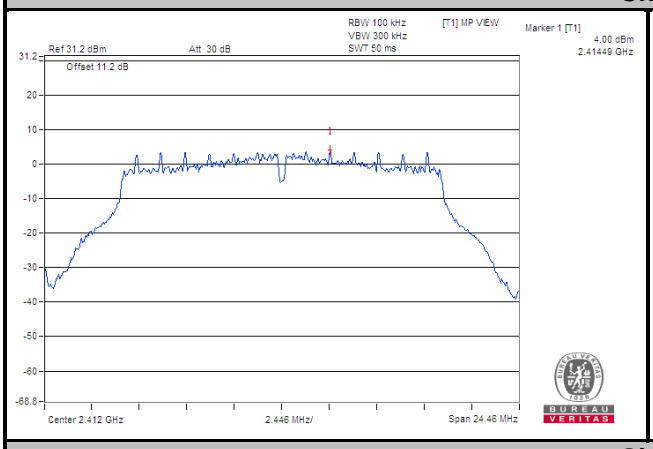


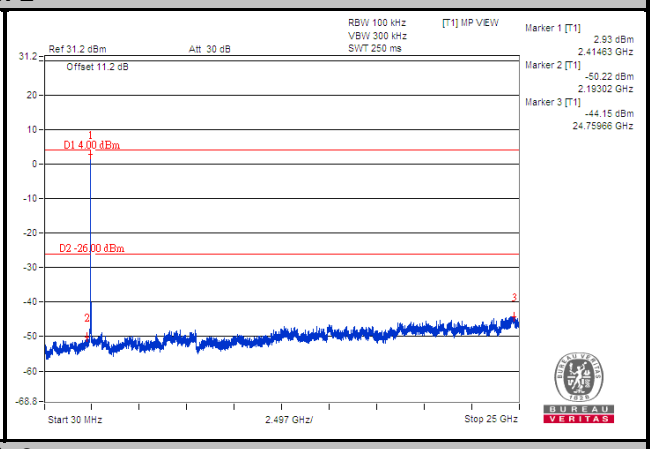
Ch 13 Band Edge



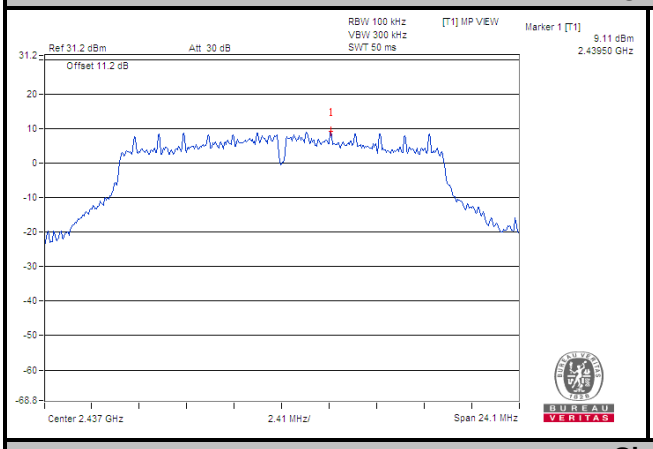
802.11g

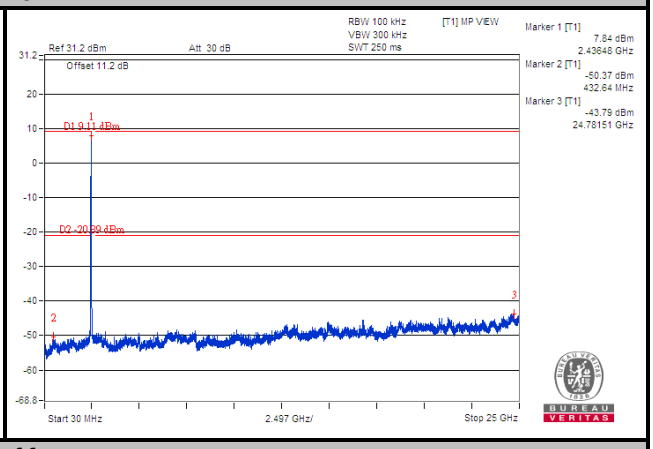
Ch 1



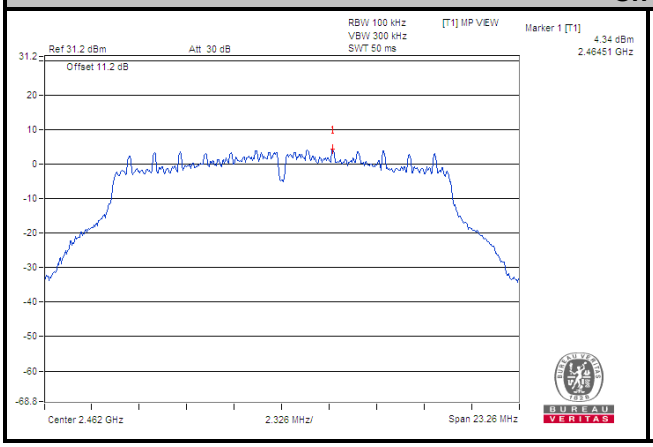


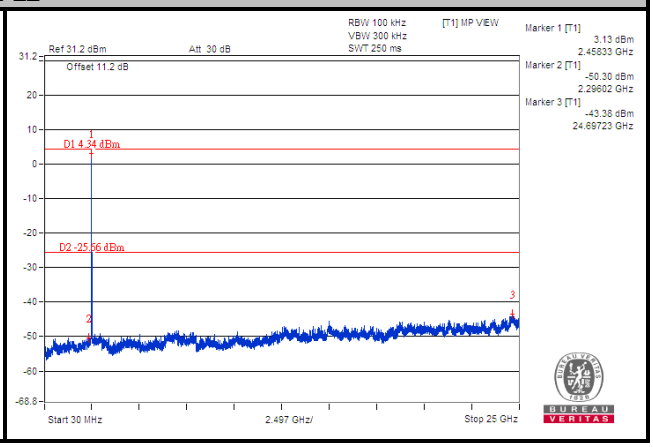
Ch 6



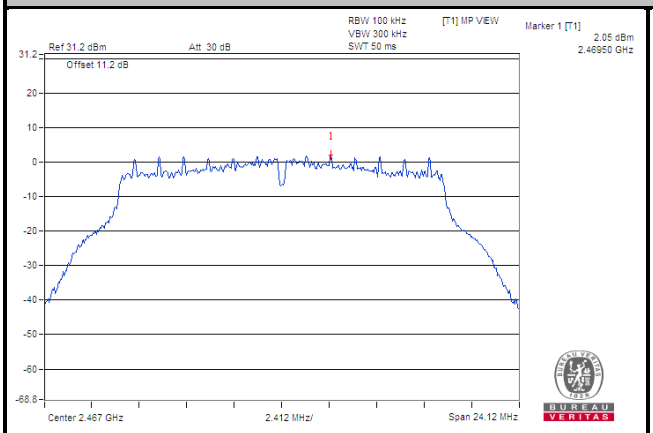


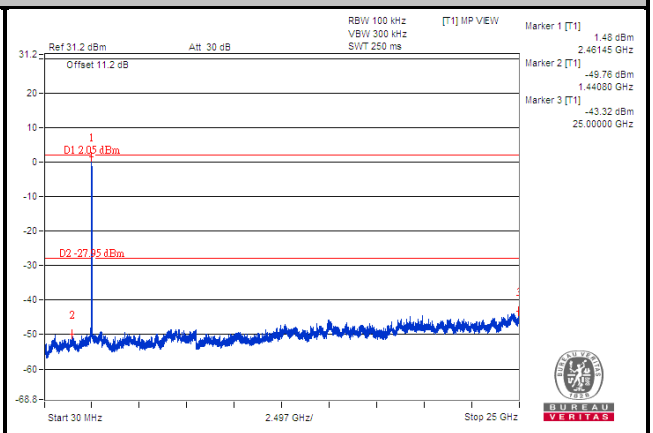
Ch 11





Ch 12





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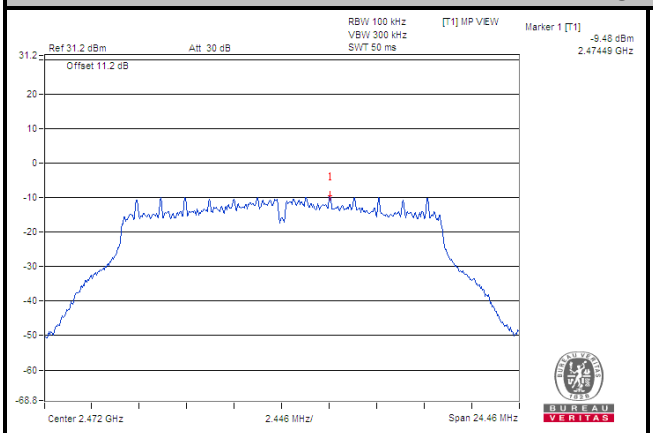
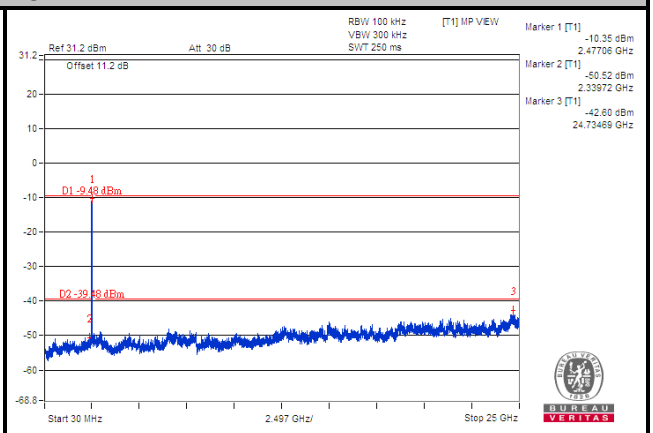
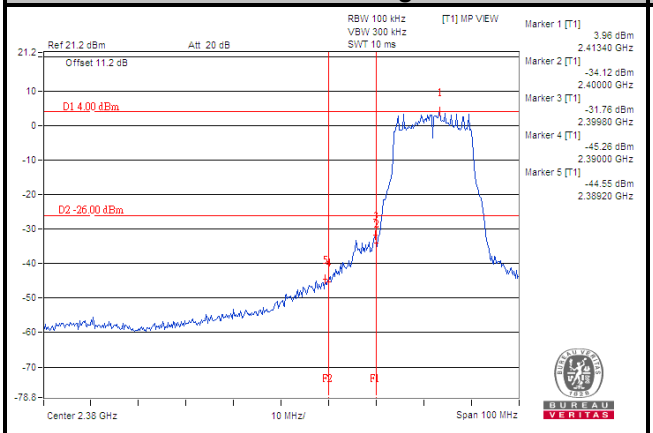
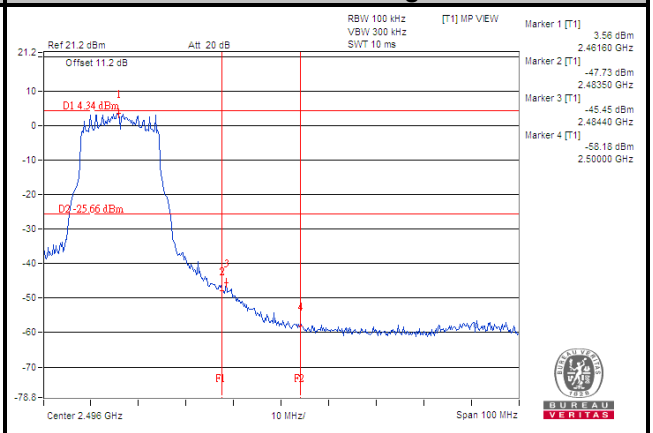




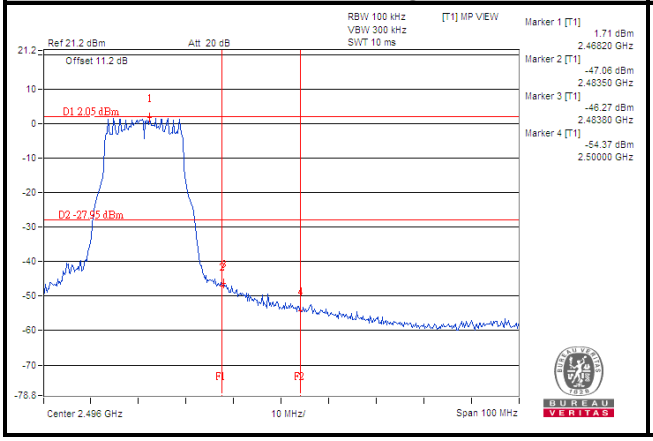
Ch 1 Band Edge



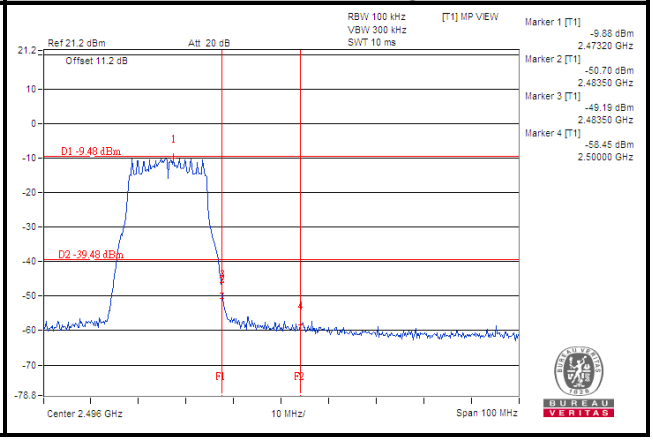
Ch 11 Band Edge



Ch 12 Band Edge

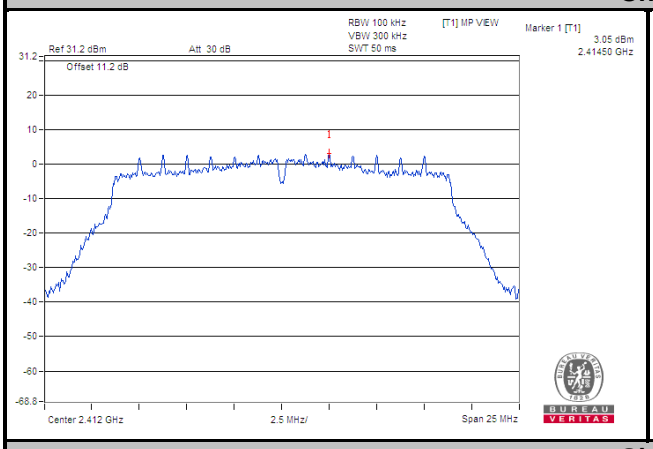


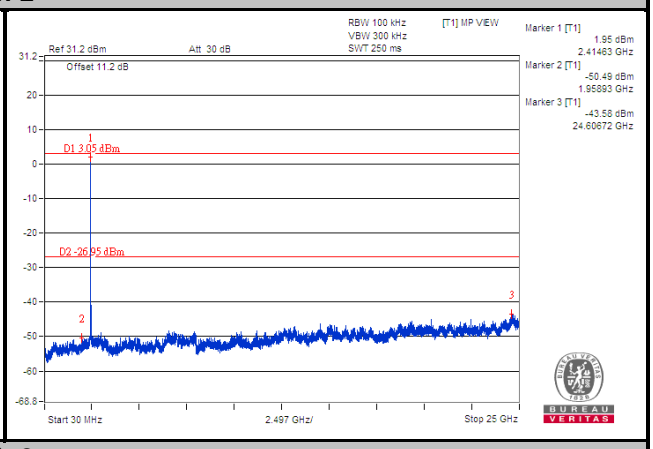
Ch 13 Band Edge



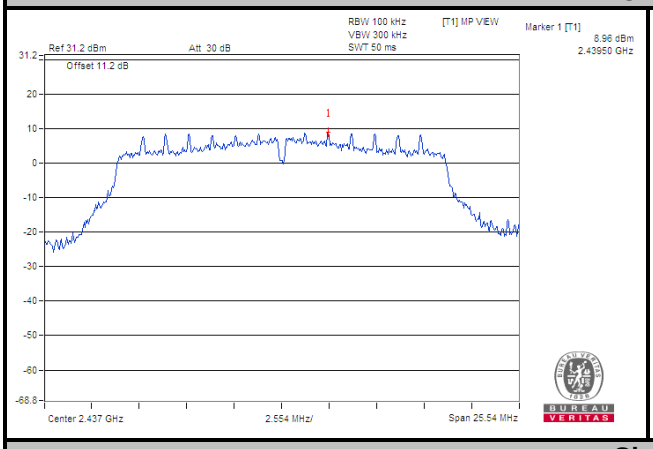
802.11n (HT20)

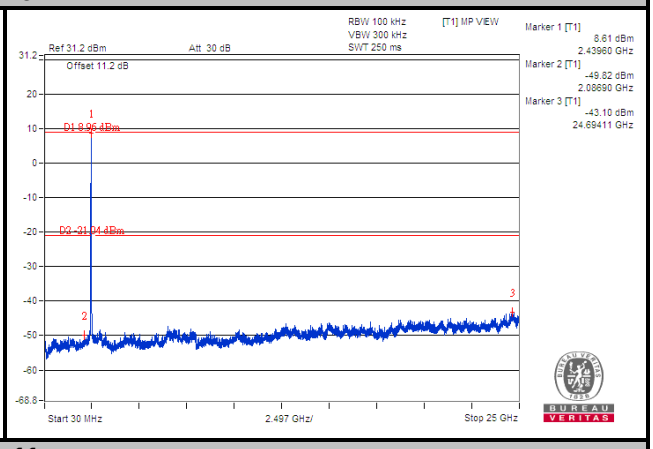
Ch 1



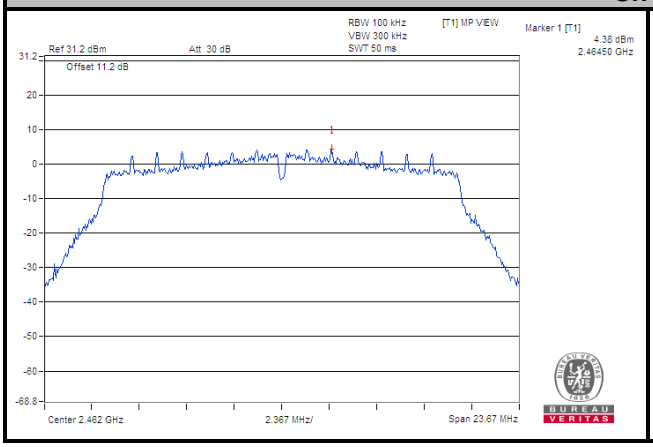


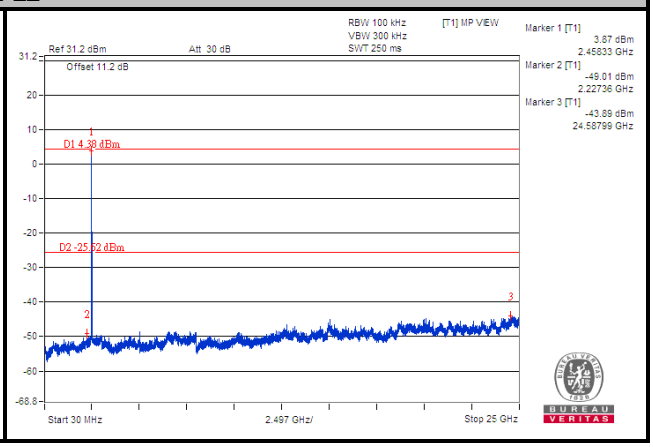
Ch 6



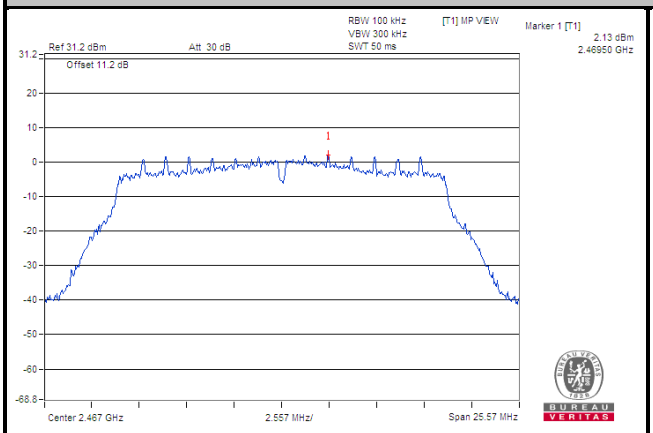


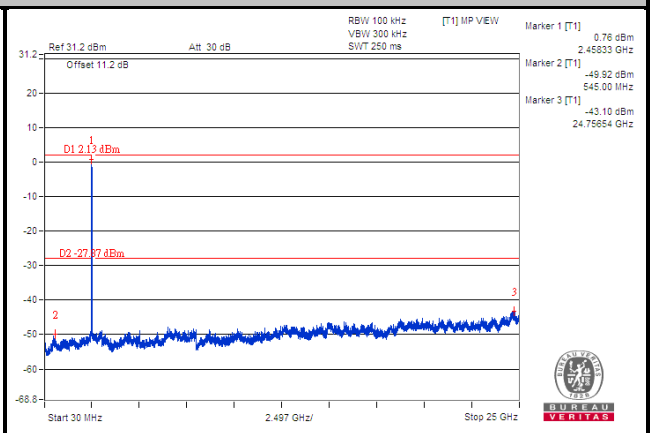
Ch 11



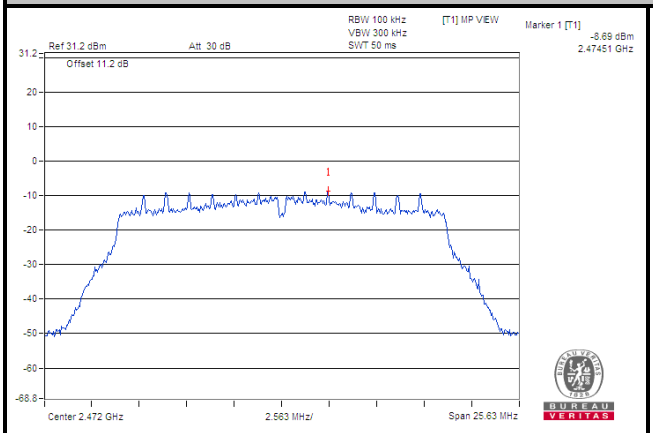


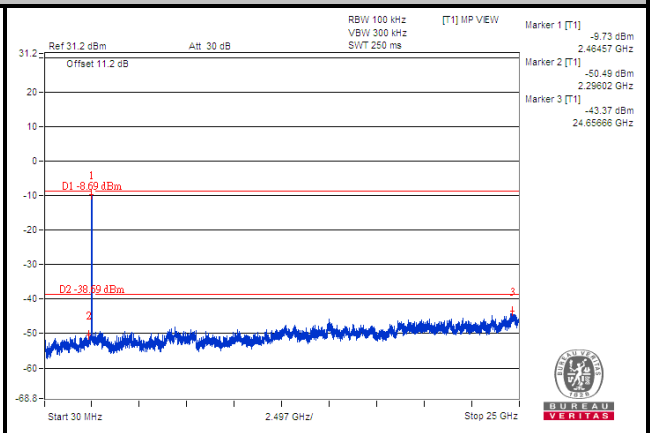
Ch 12



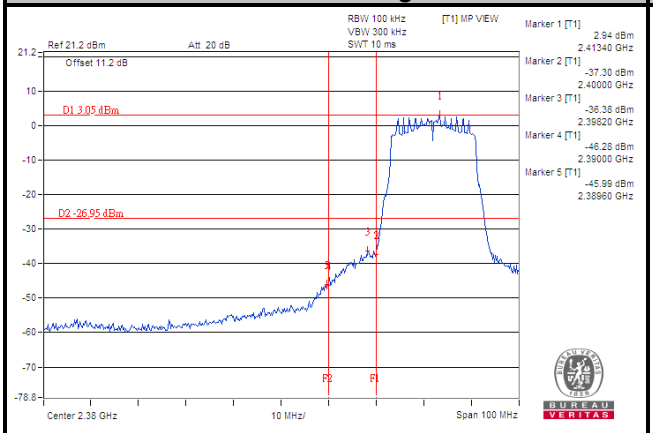


Ch 13

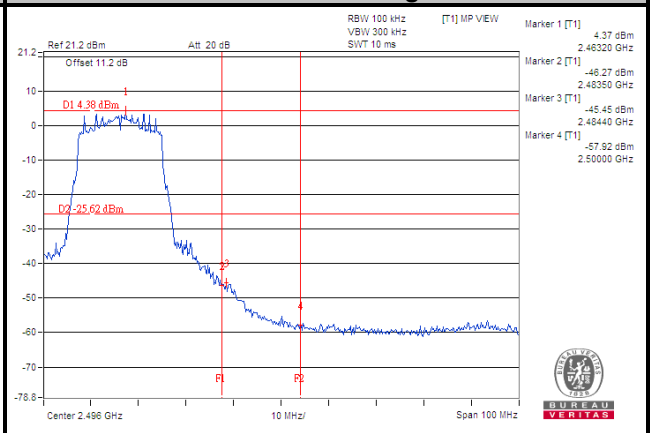




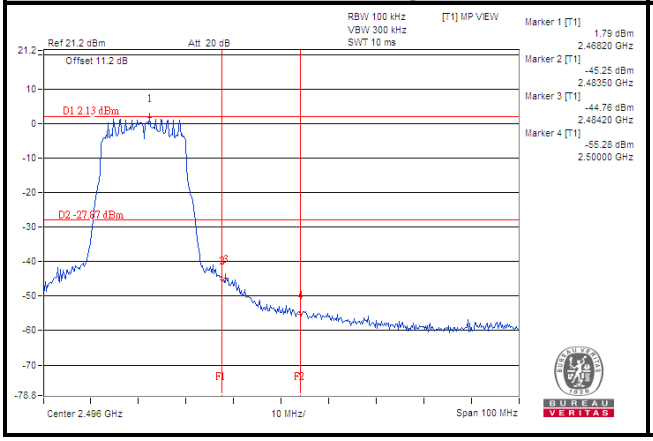
Ch 1 Band Edge



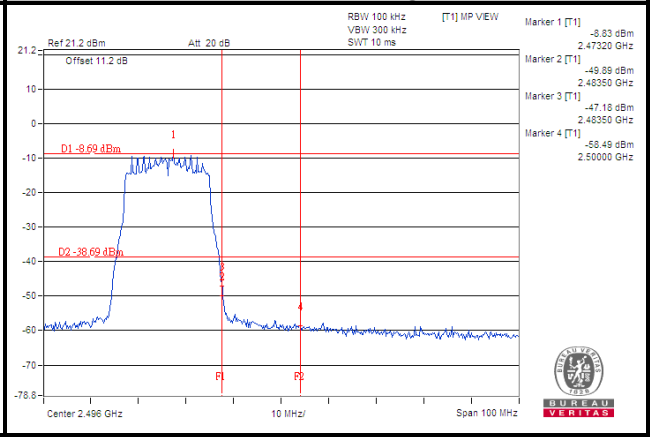
Ch 11 Band Edge



Ch 12 Band Edge



Ch 13 Band Edge

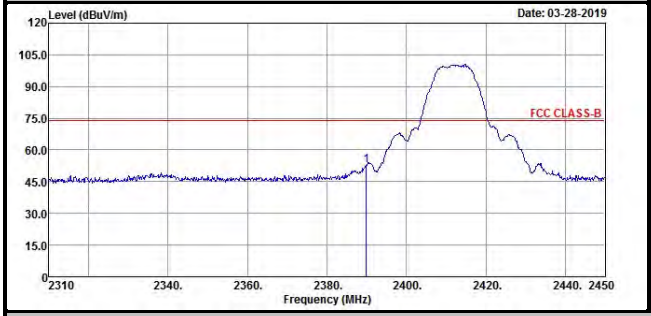
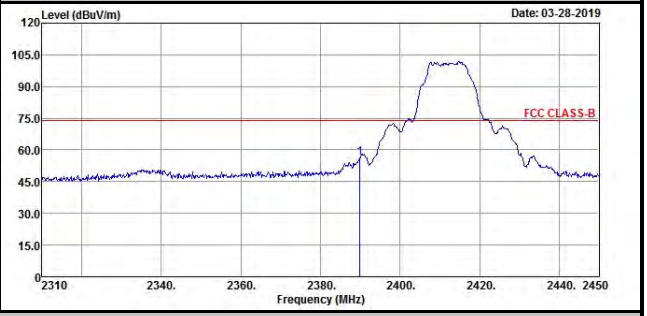
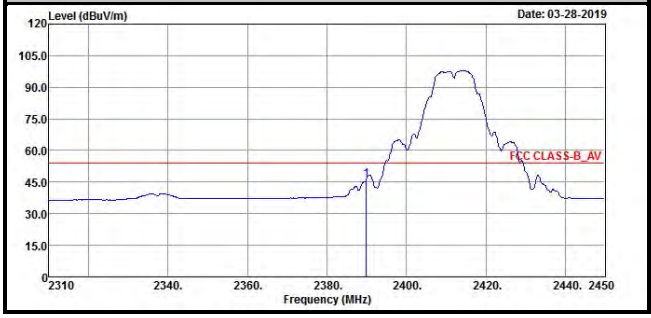
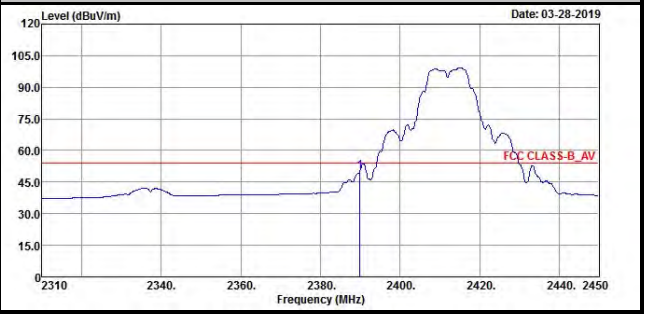


5 Pictures of Test Arrangements

Please refer to the attached file (Test Setup Photo).

Annex A- Band-edge measurement

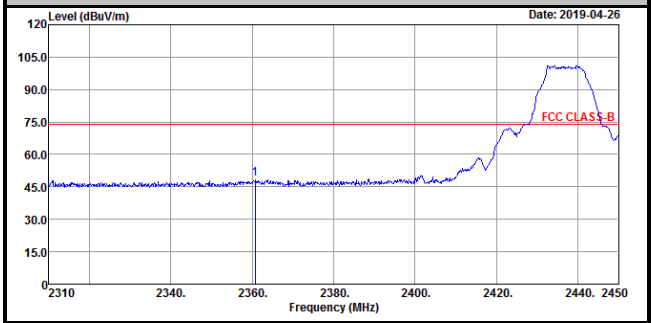
802.11b

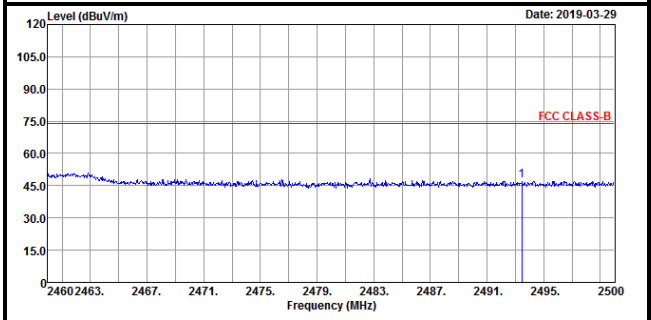
Ch 1	
Peak	
Horizontal	**Vertical**
	
Average	
Horizontal	**Vertical**
	

Ch 6

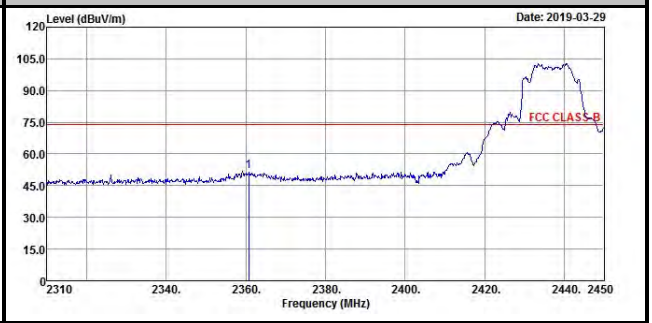
Peak

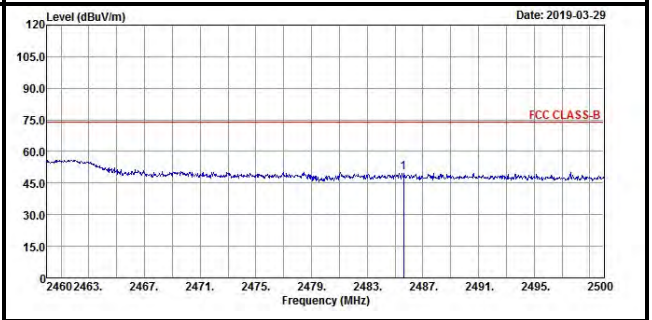
Horizontal





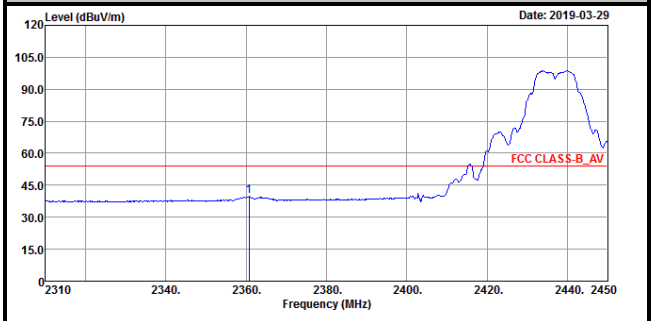
Vertical

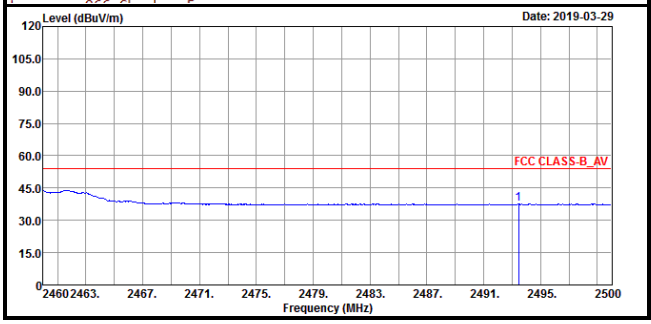




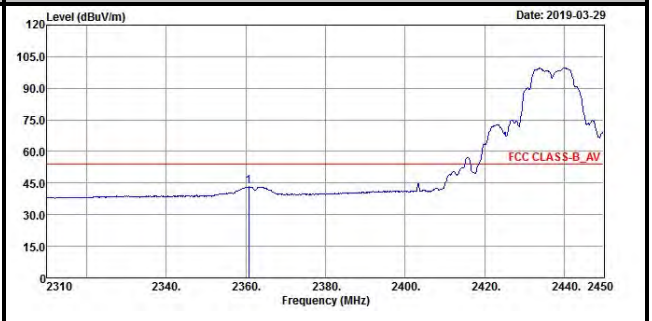
Average

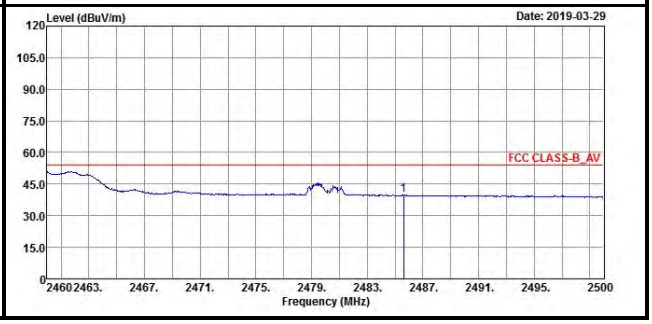
Horizontal





Vertical

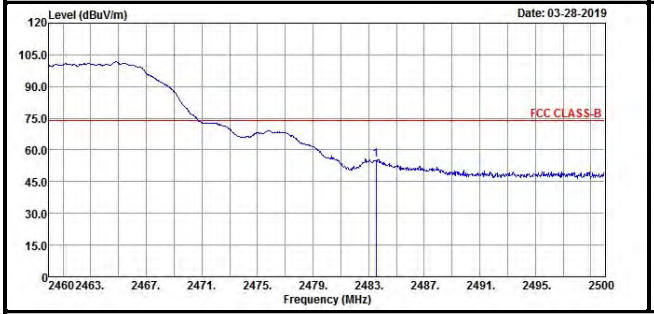




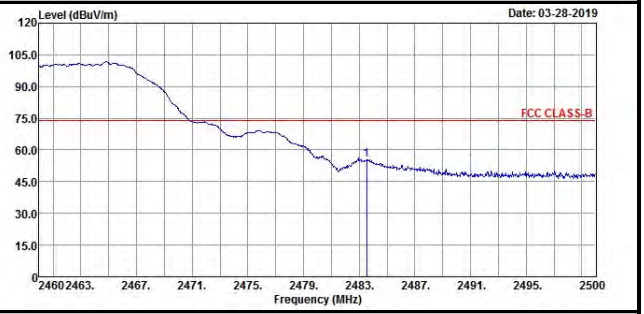
Ch 11

Peak

Horizontal

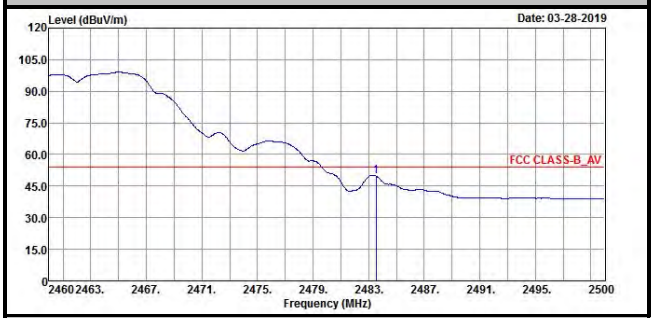


Vertical

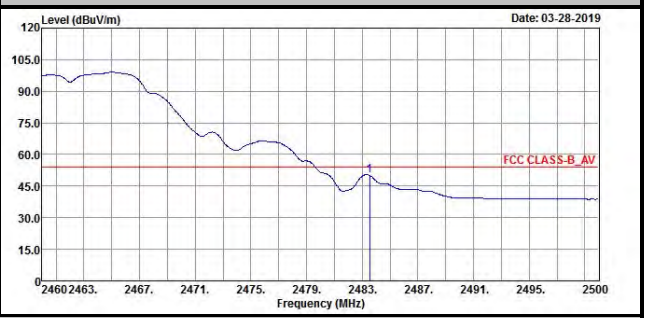


Average

Horizontal



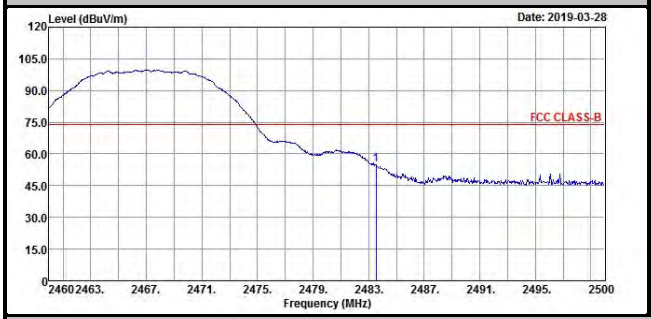
Vertical



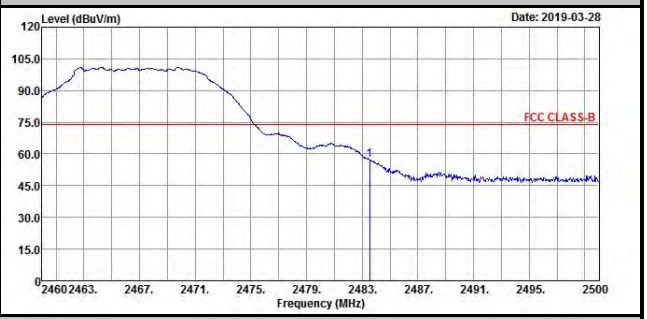
Ch 12

Peak

Horizontal

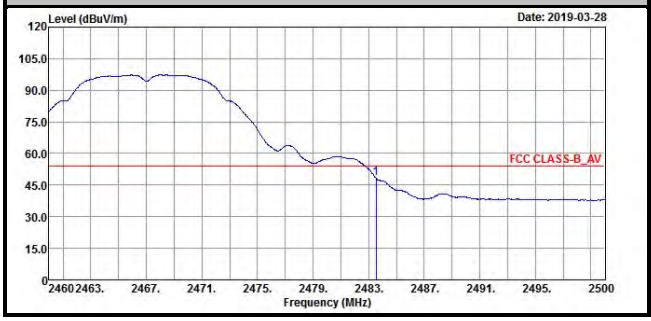


Vertical

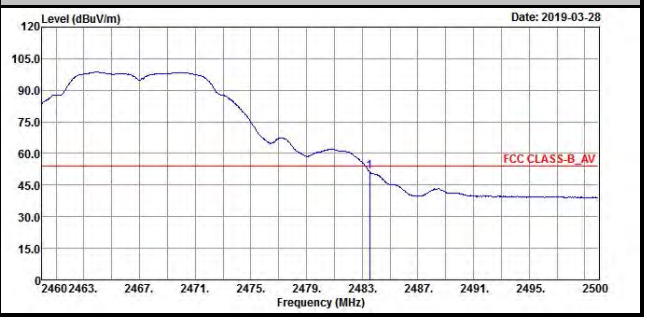


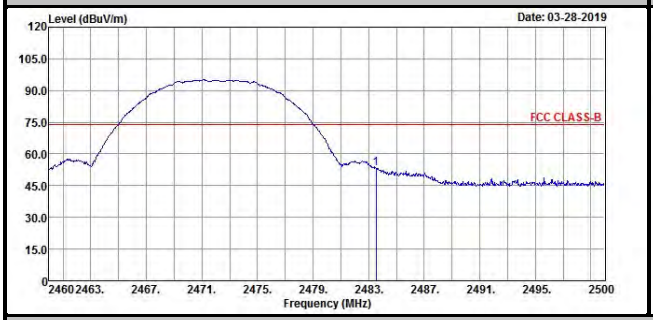
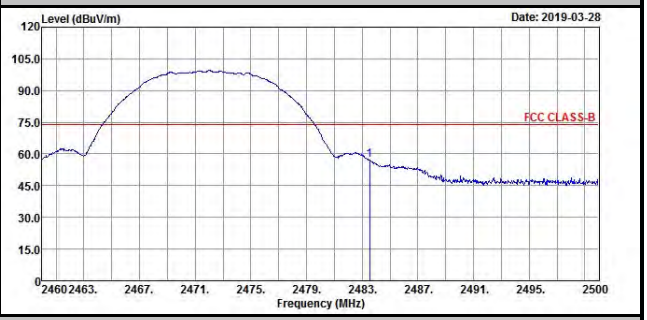
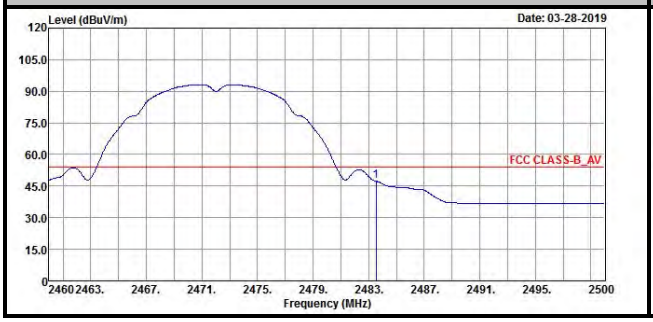
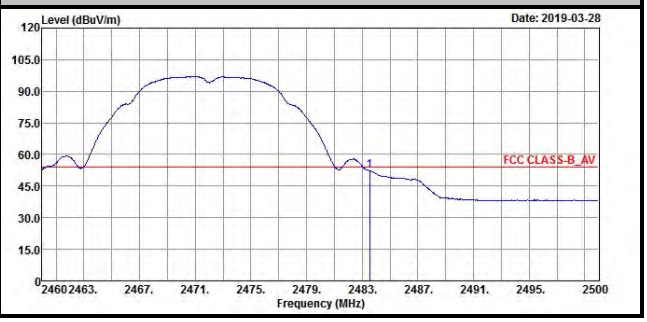
Average

Horizontal

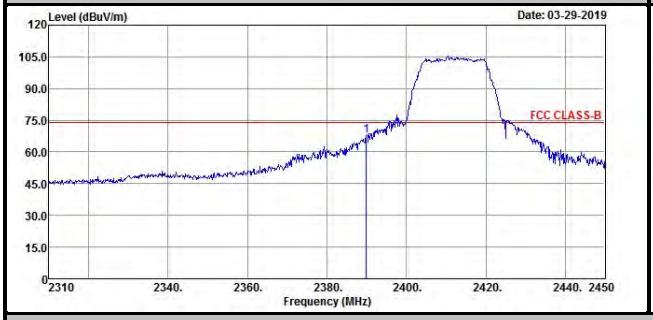
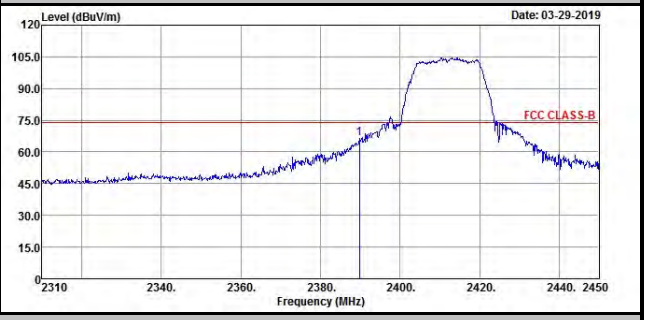
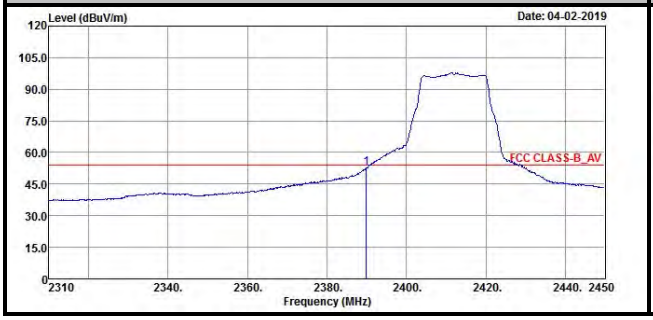
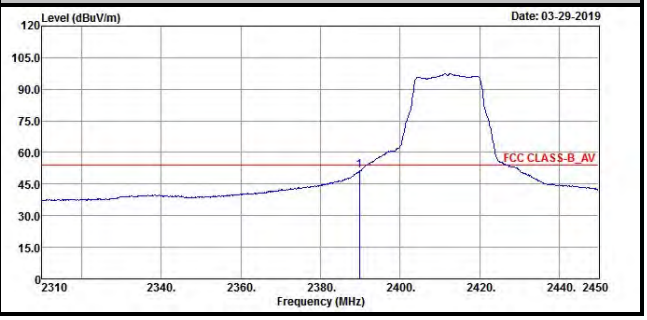


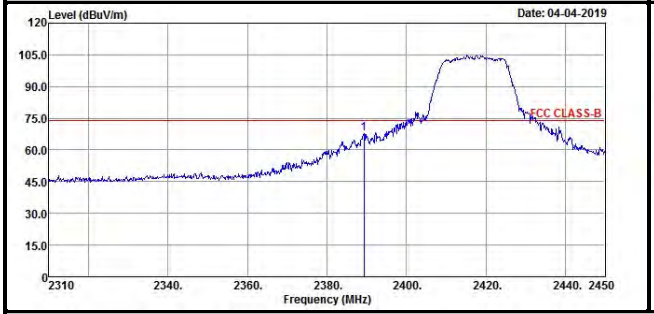
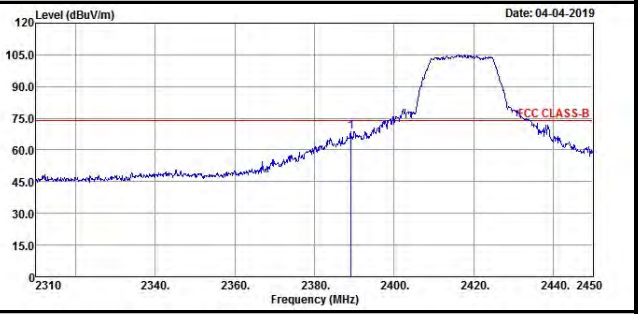
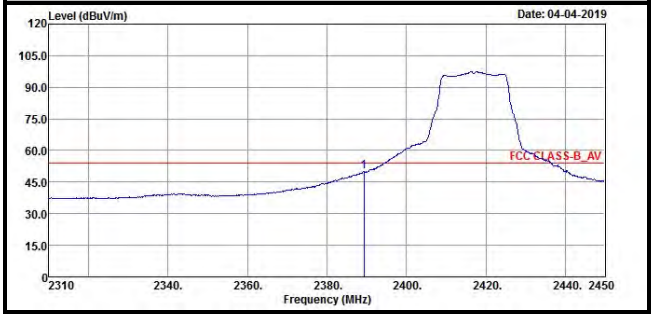
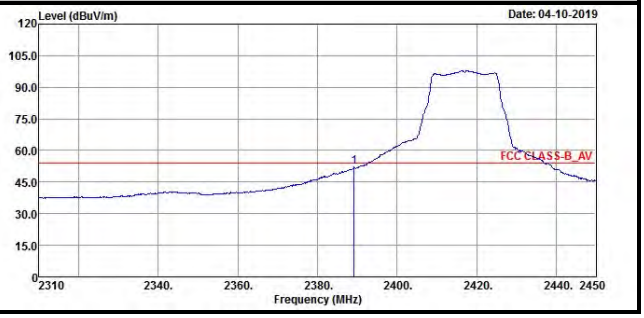
Vertical



Ch 13	
Peak	
Horizontal	**Vertical**
	
Average	
Horizontal	**Vertical**
	

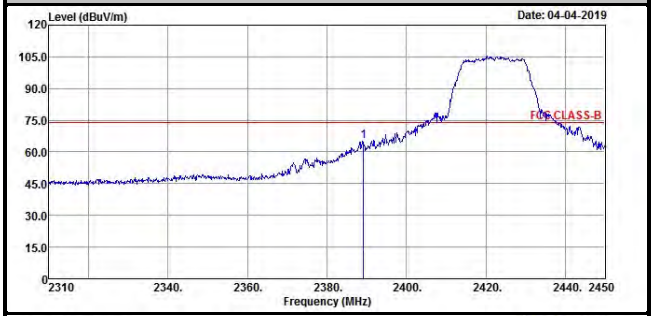
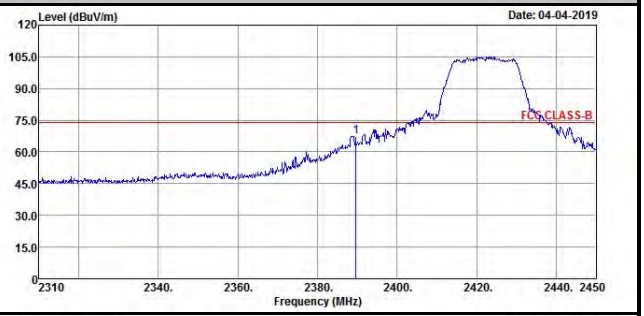
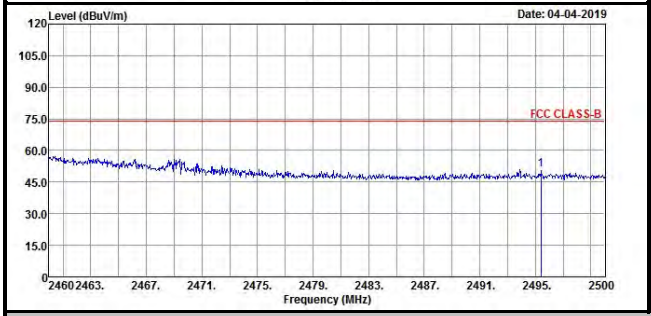
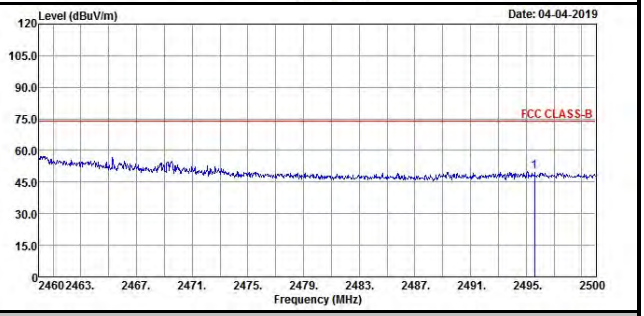
802.11g

Ch 1	
Peak	
Horizontal	**Vertical**
	
Average	
Horizontal	**Vertical**
	

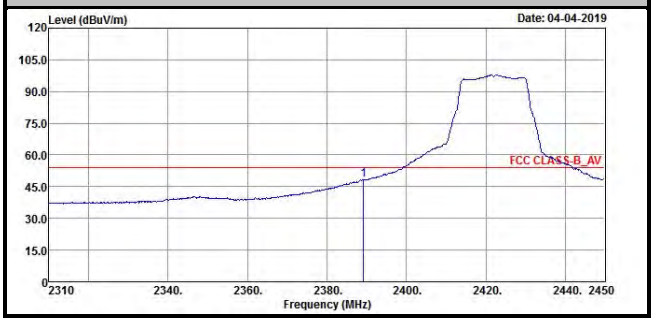
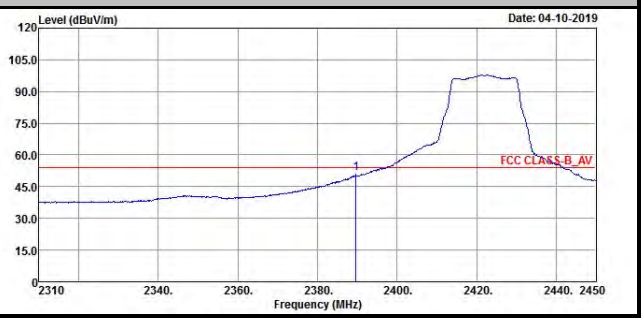
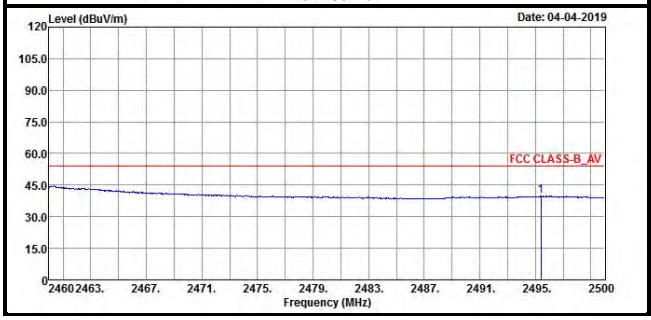
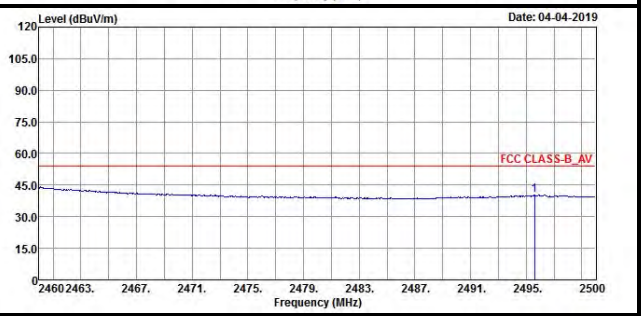
Ch 2	
Peak	
Horizontal	**Vertical**
	
Average	
Horizontal	**Vertical**
	

Ch 3

Peak

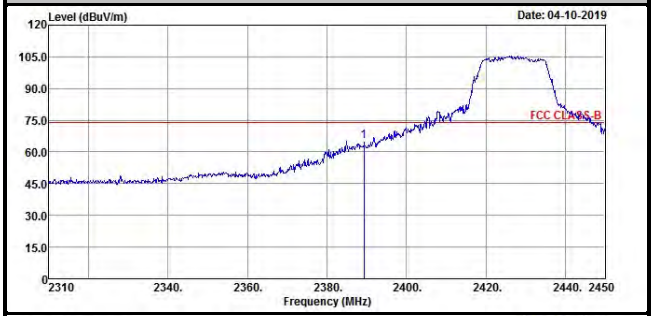
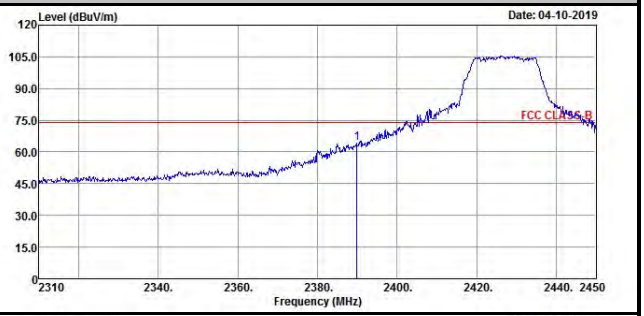
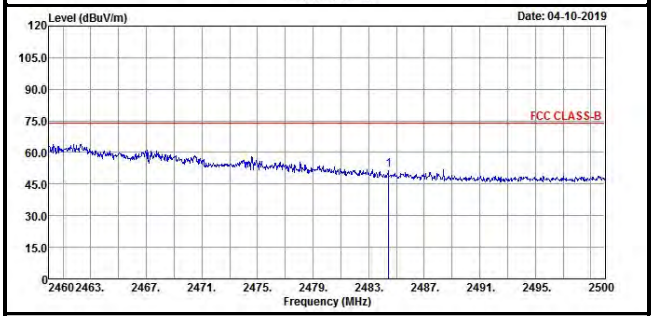
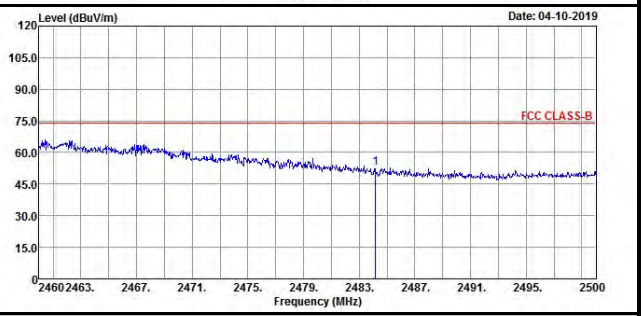
Horizontal	Vertical
	
	

Average

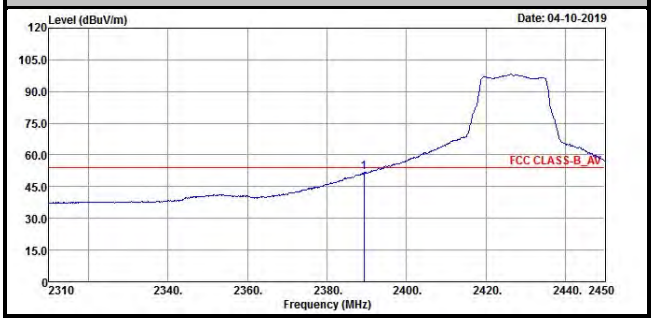
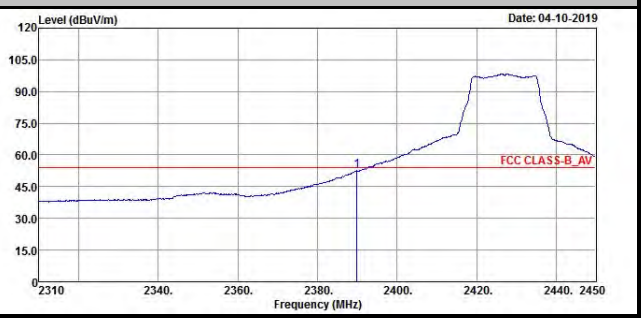
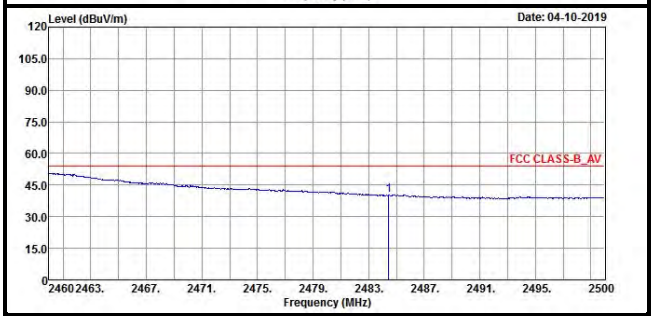
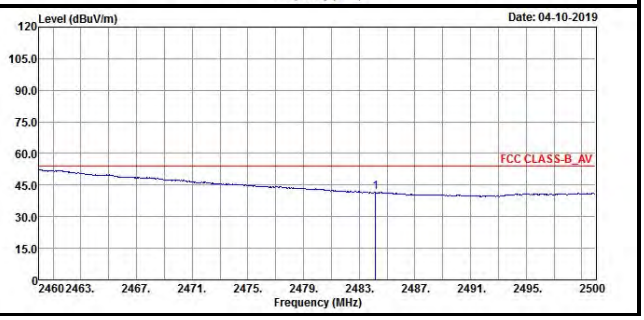
Horizontal	Vertical
	
	

Ch 4

Peak

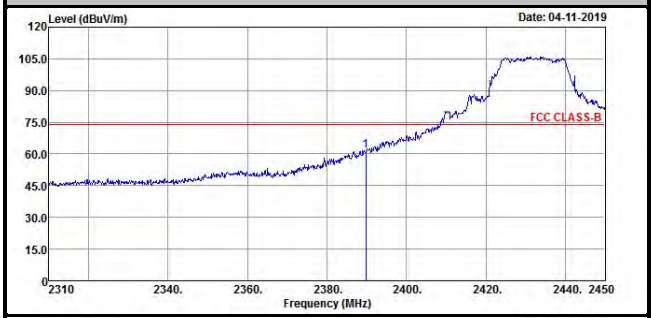
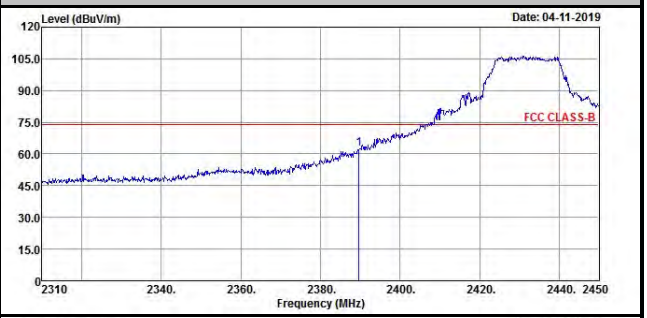
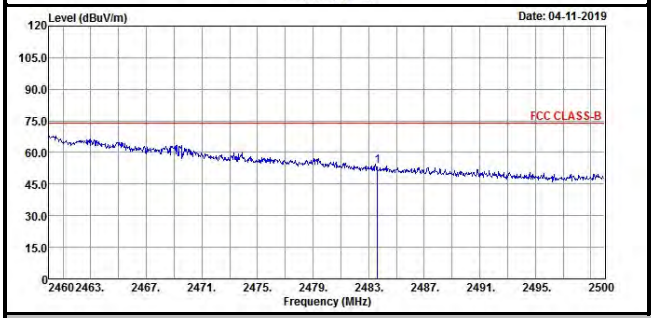
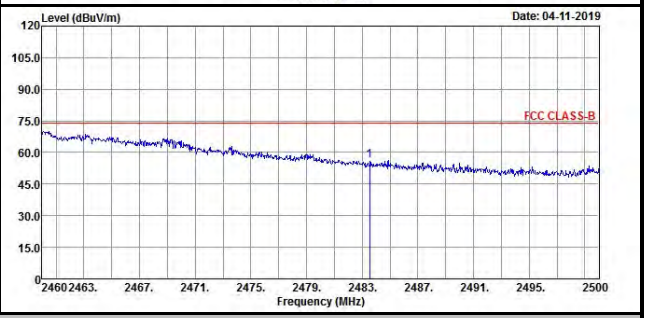
Horizontal	Vertical
	
	

Average

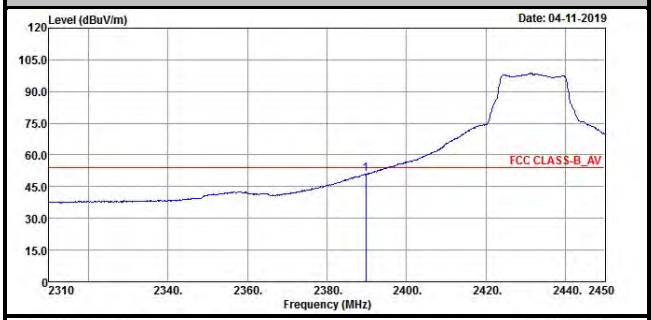
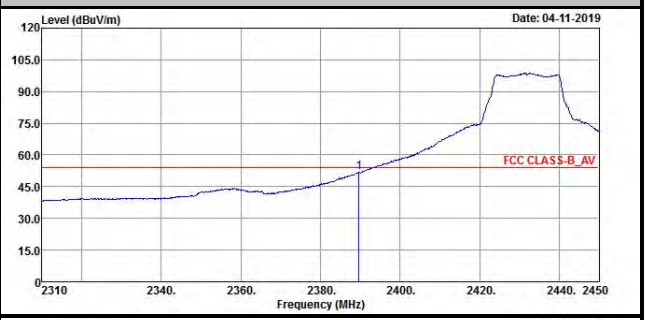
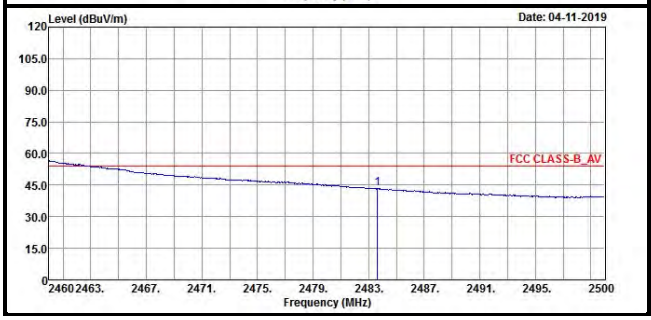
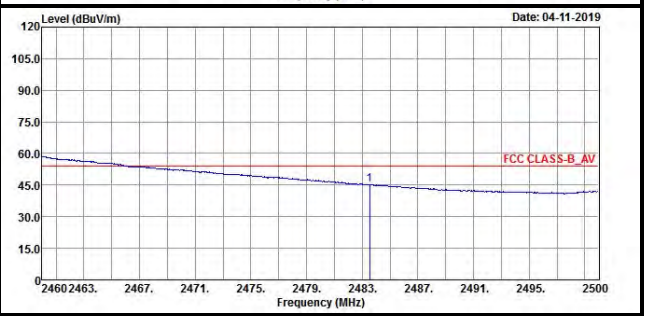
Horizontal	Vertical
	
	

Ch 5

Peak

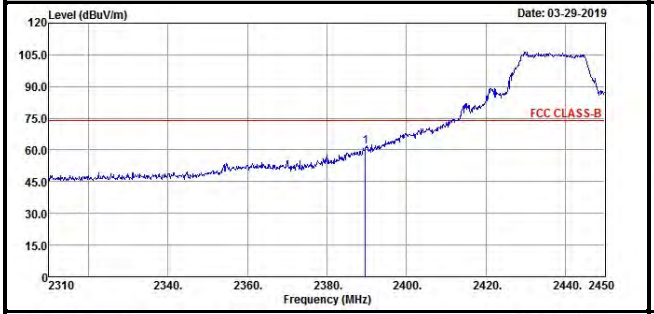
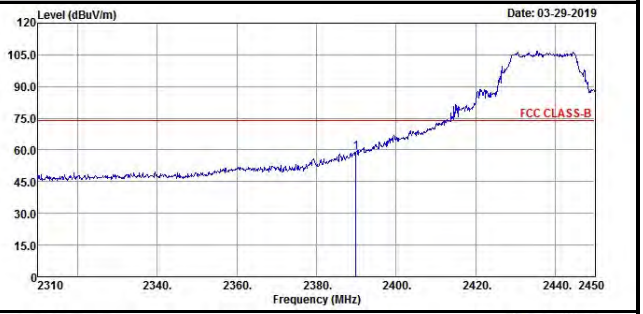
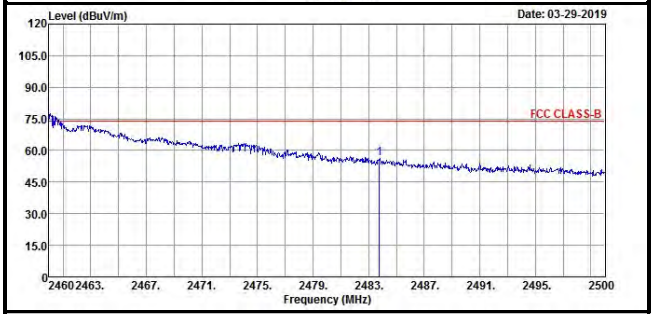
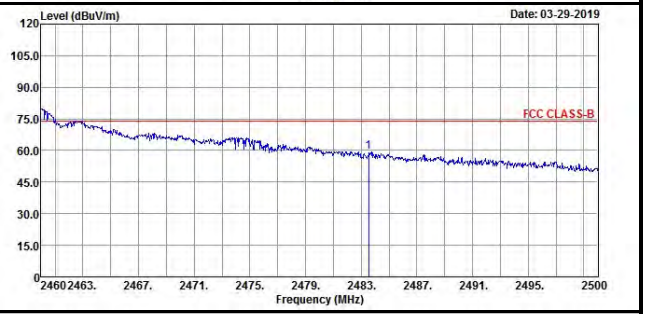
Horizontal	Vertical
	
	

Average

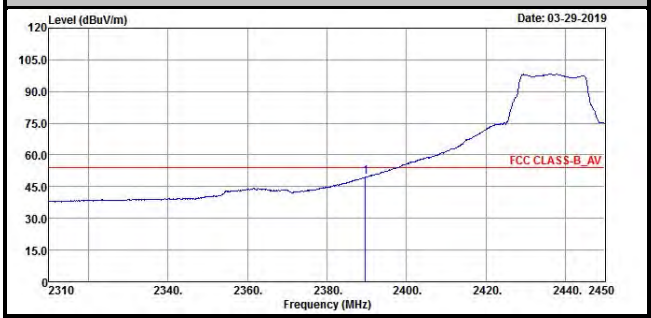
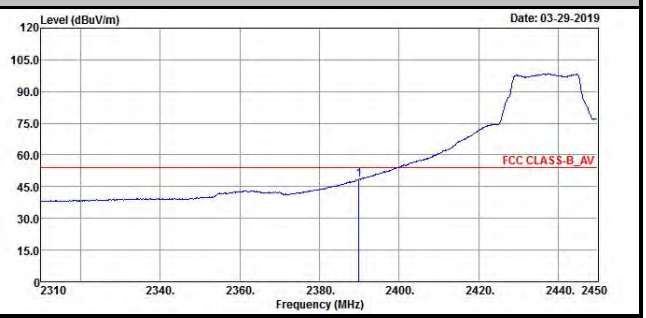
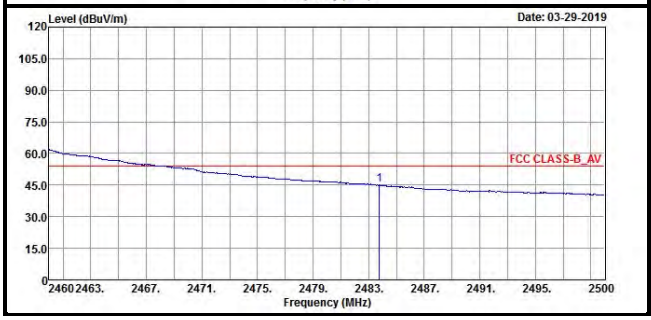
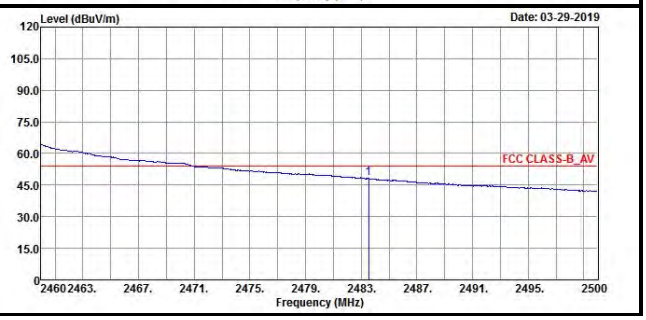
Horizontal	Vertical
	
	

Ch 6

Peak

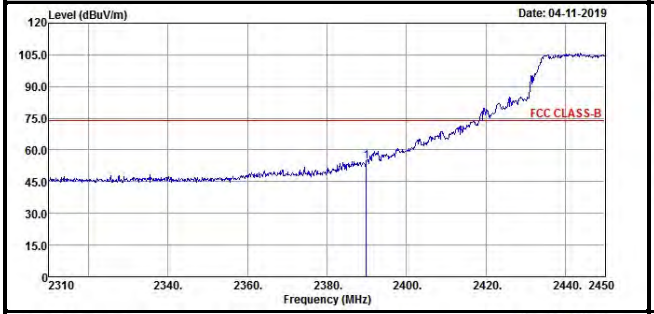
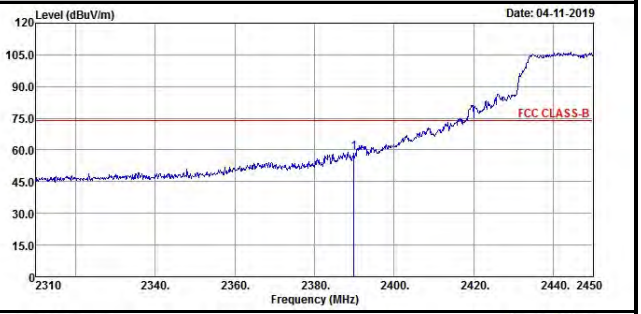
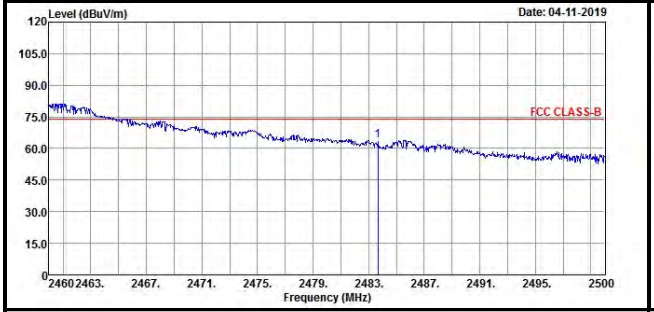
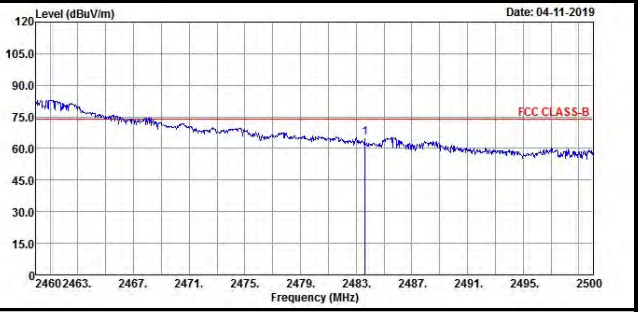
Horizontal	Vertical
	
	

Average

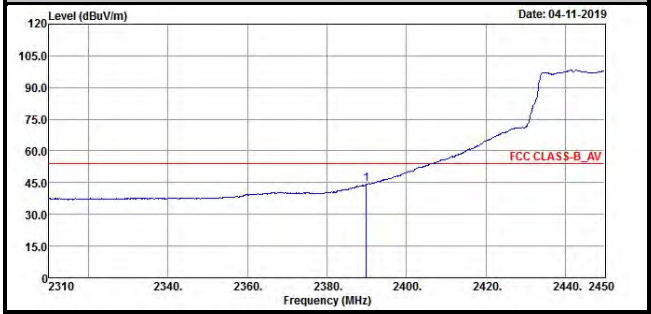
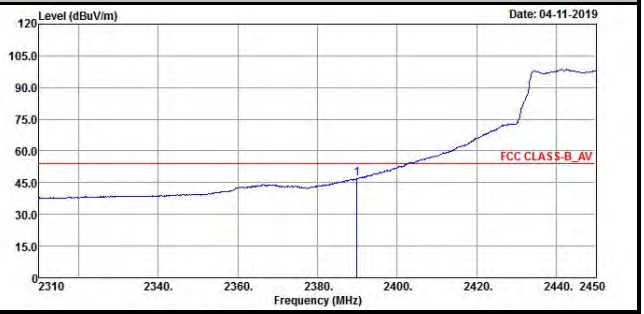
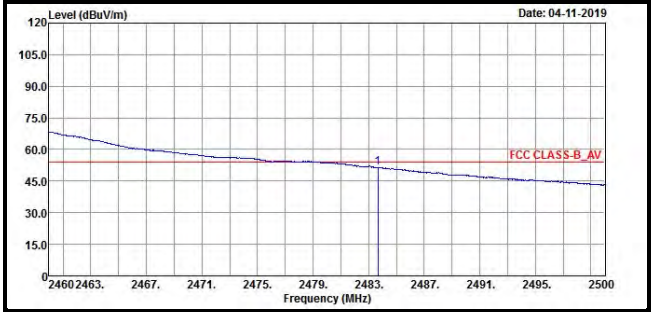
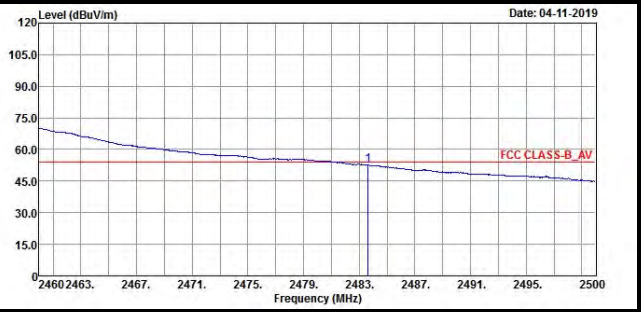
Horizontal	Vertical
	
	

Ch 7

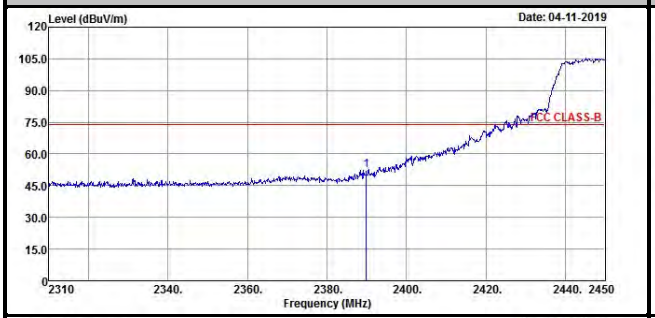
Peak

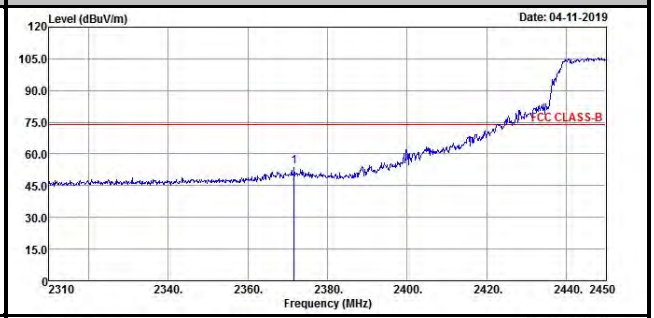
Horizontal	Vertical
	
	

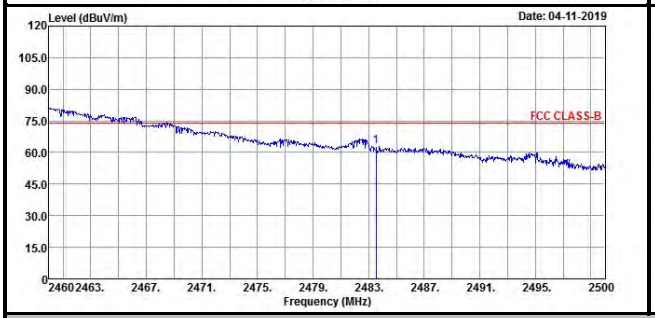
Average

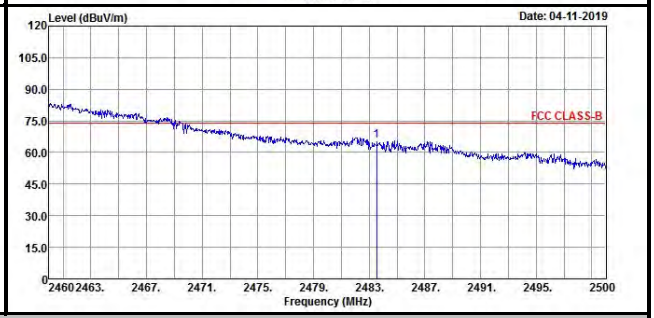
Horizontal	Vertical
	
	

Ch 8	
Peak	
Horizontal	**Vertical**

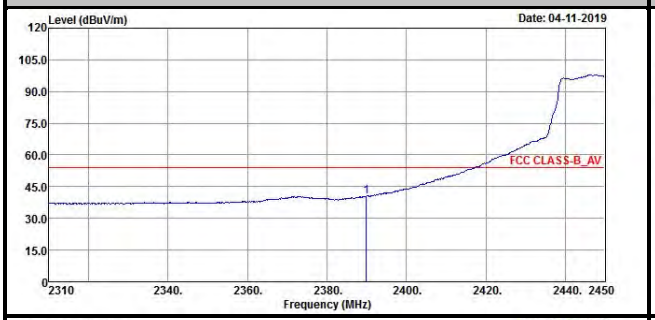


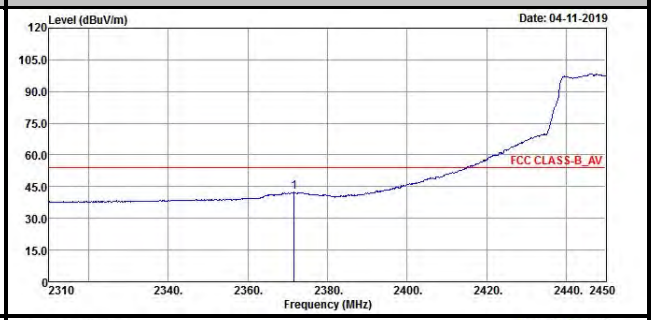


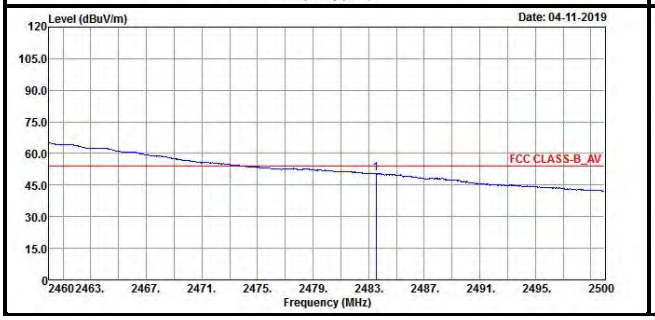


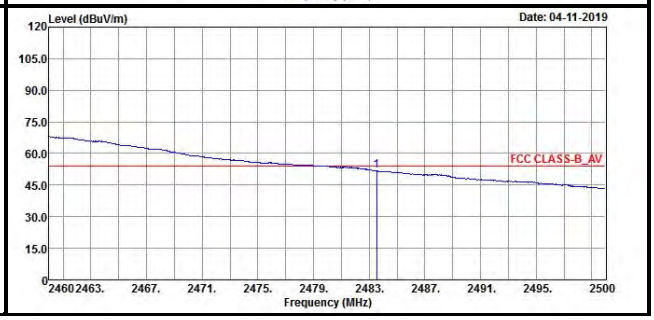


Average	
Horizontal	**Vertical**



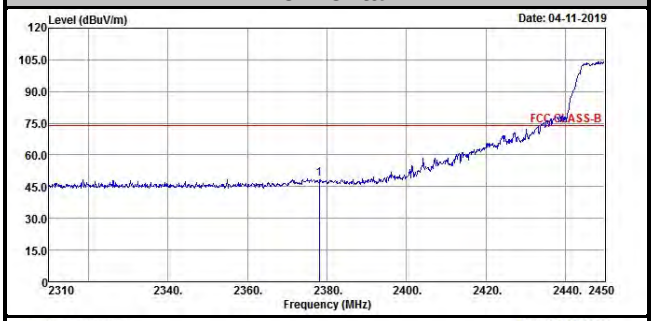
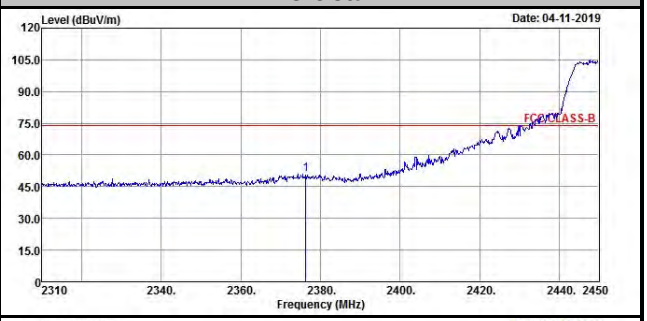
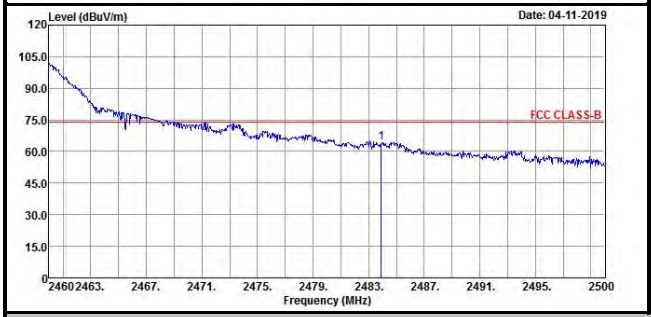
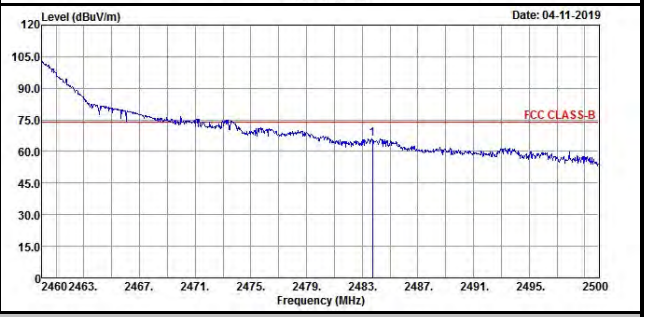




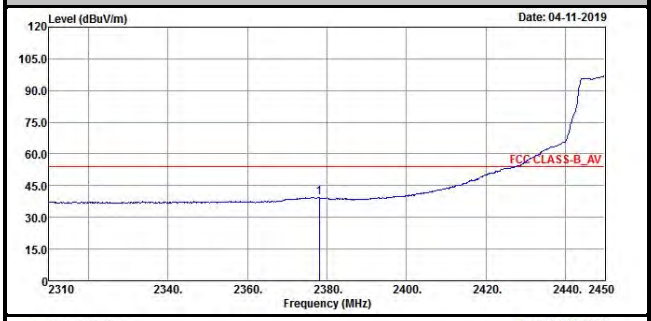
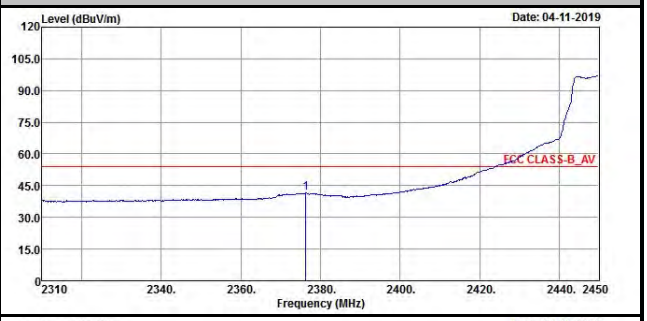
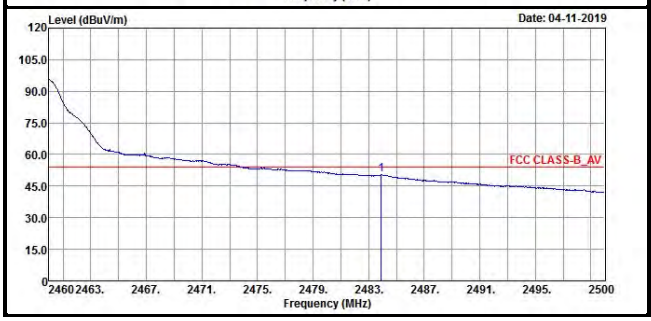
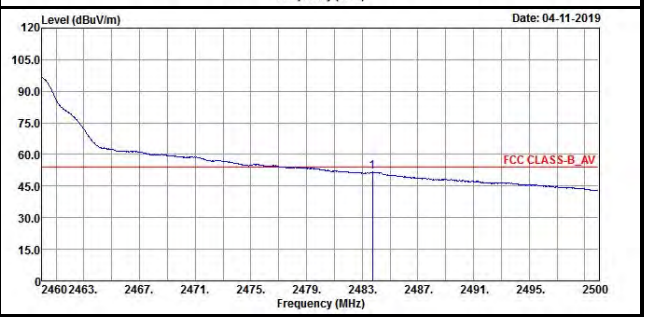


Ch 9

Peak

Horizontal	Vertical
	
	

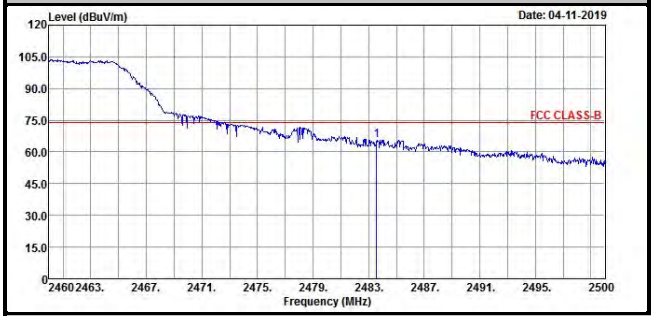
Average

Horizontal	Vertical
	
	

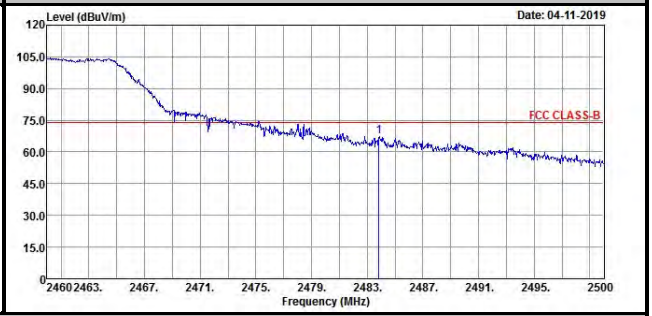
Ch 10

Peak

Horizontal

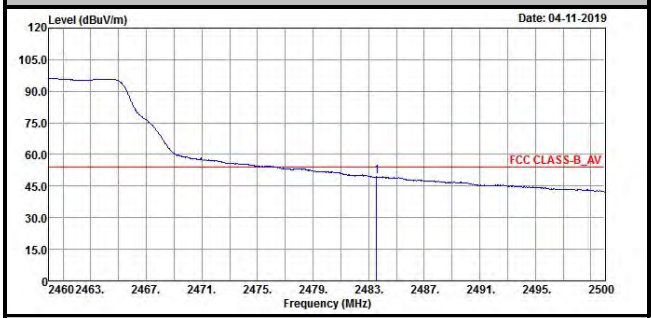


Vertical

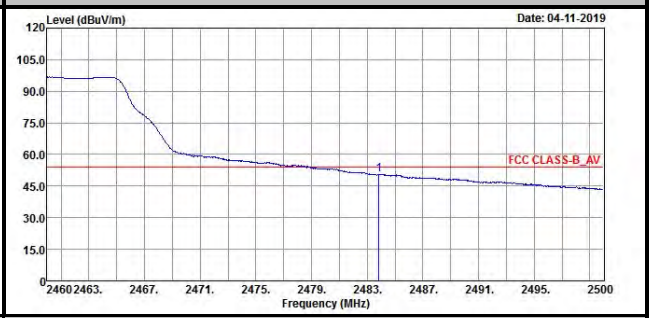


Average

Horizontal



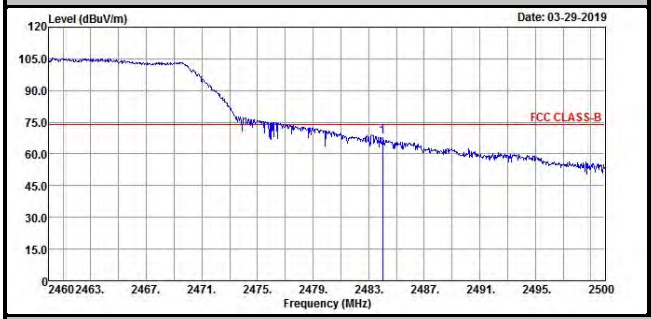
Vertical



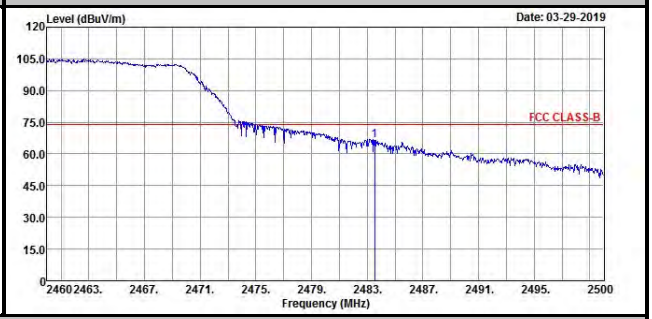
Ch 11

Peak

Horizontal

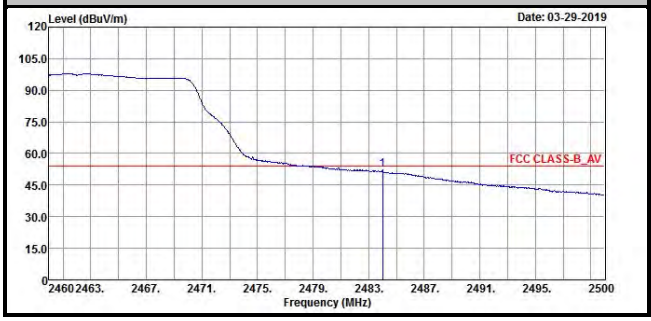


Vertical

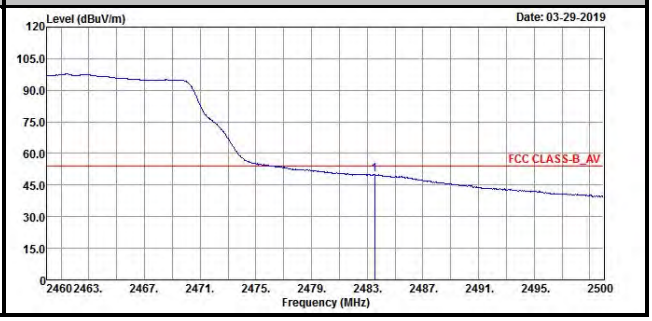


Average

Horizontal



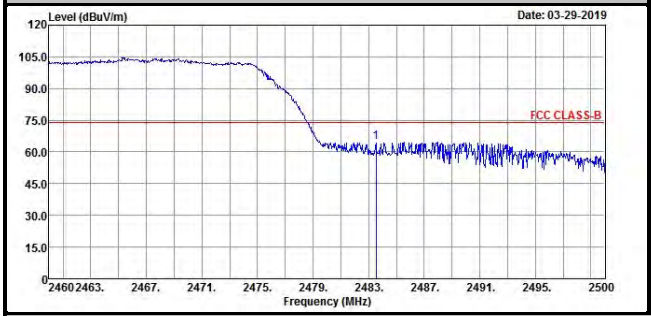
Vertical



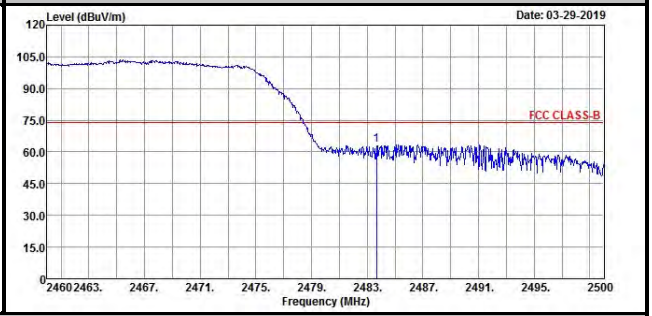
Ch 12

Peak

Horizontal

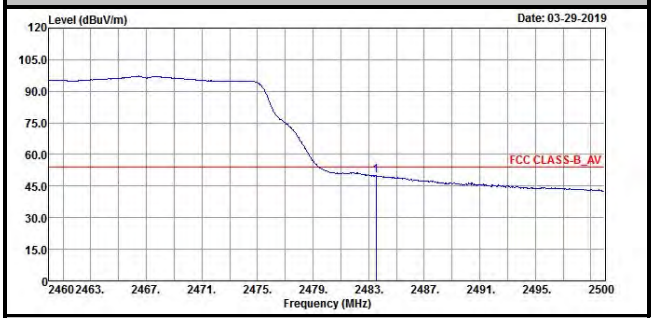


Vertical

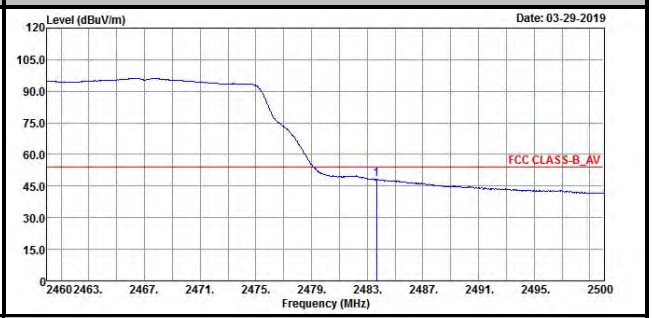


Average

Horizontal



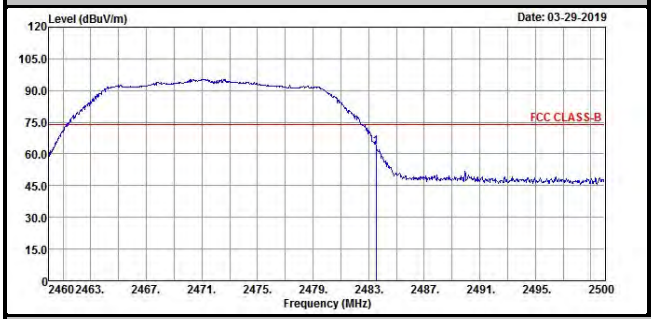
Vertical



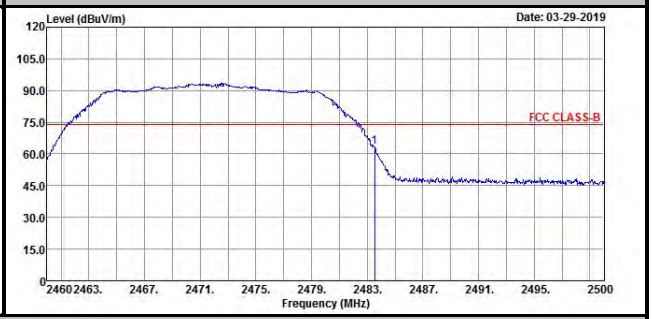
Ch 13

Peak

Horizontal

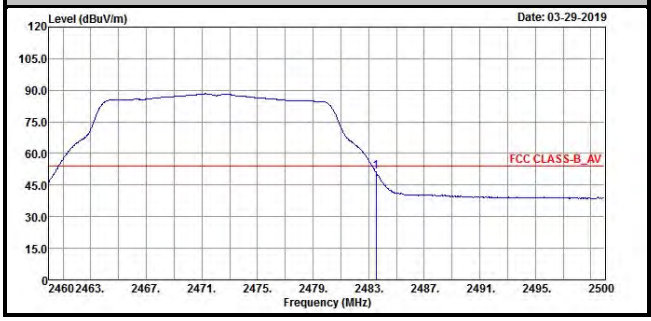


Vertical

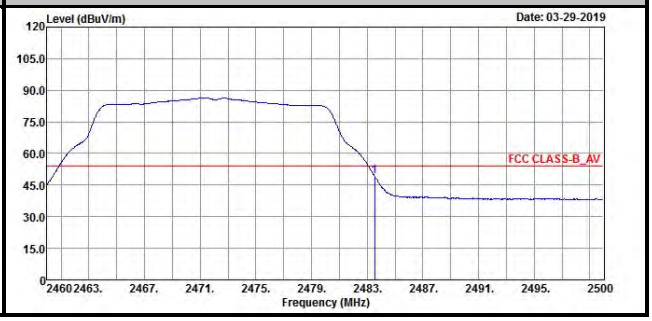


Average

Horizontal



Vertical

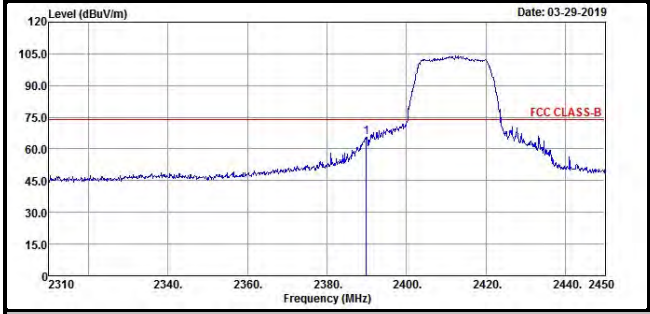


802.11n (HT20)

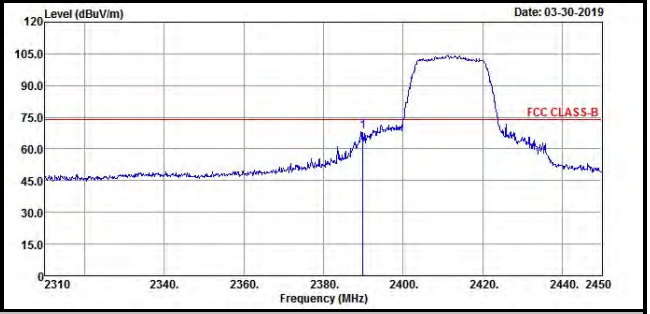
Ch 1

Peak

Horizontal

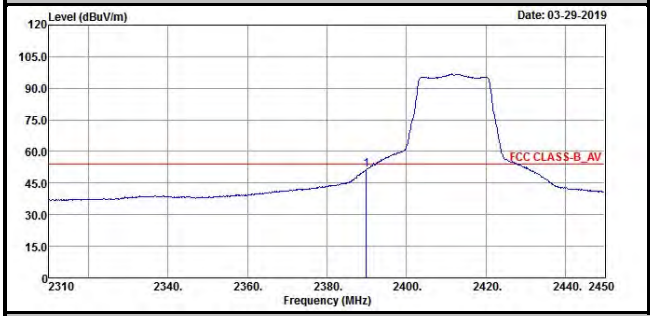


Vertical

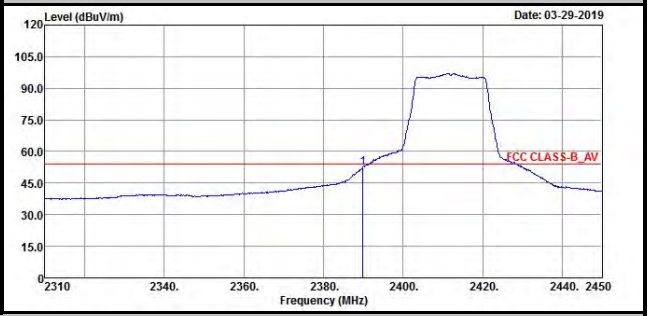


Average

Horizontal



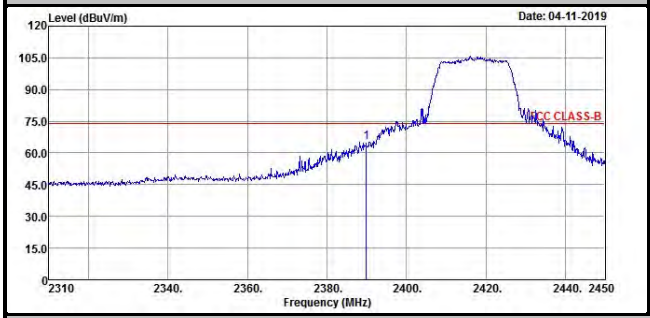
Vertical



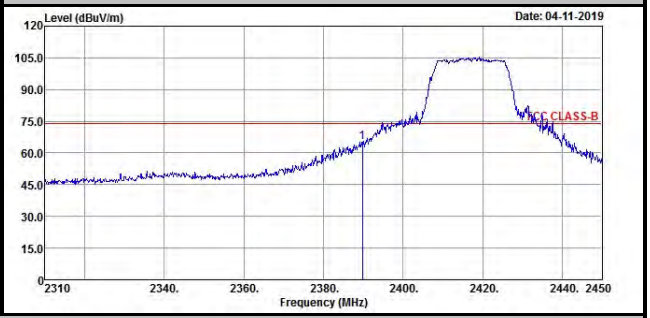
Ch 2

Peak

Horizontal

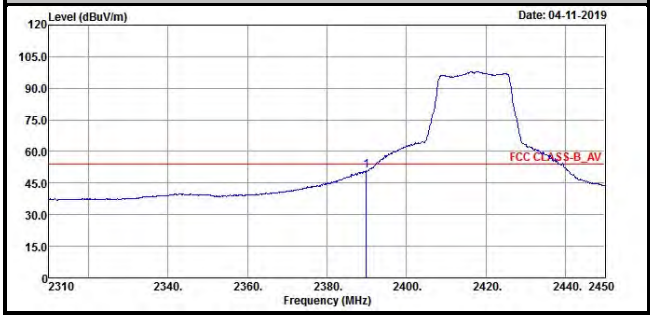


Vertical

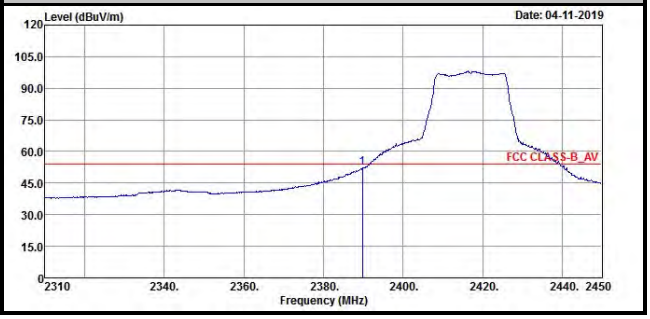


Average

Horizontal



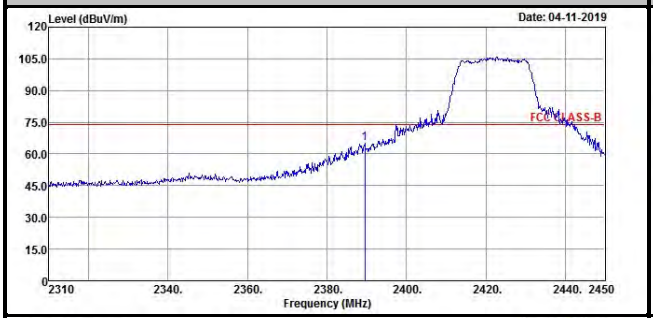
Vertical

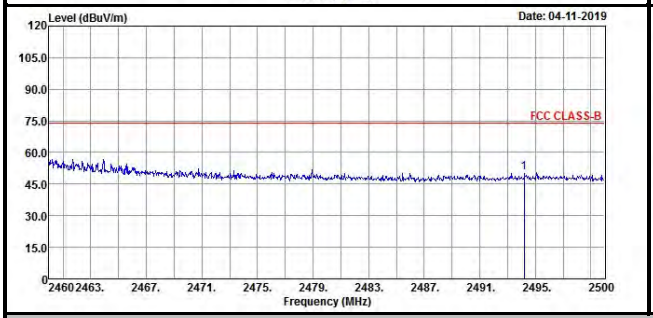


Ch 3

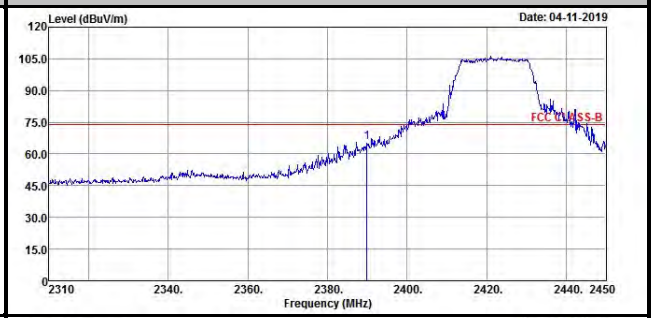
Peak

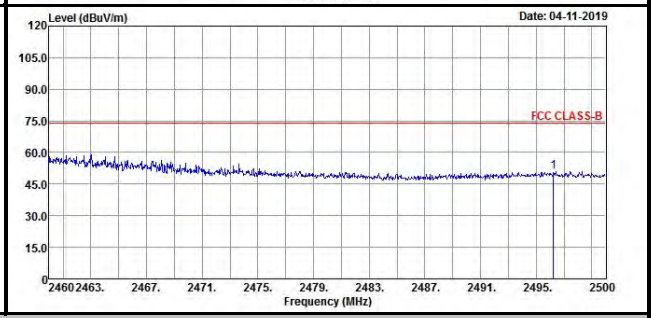
Horizontal





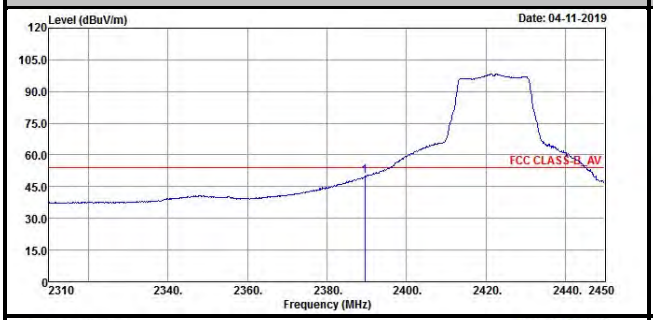
Vertical

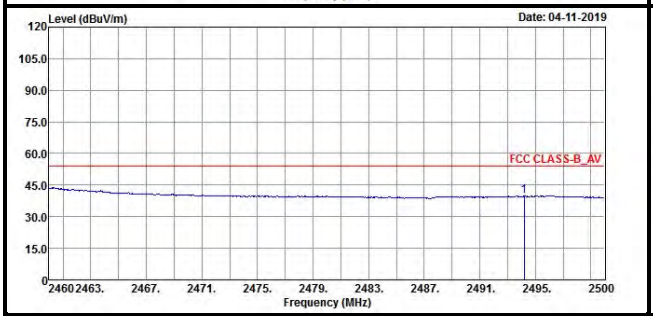




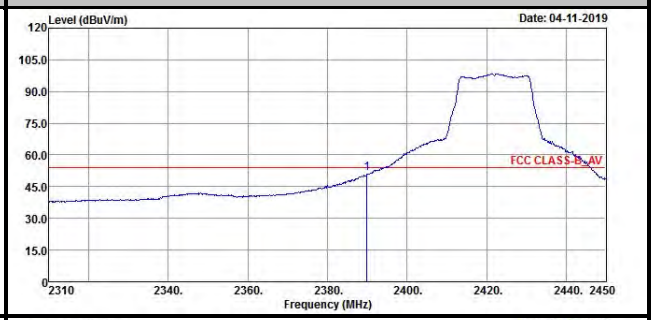
Average

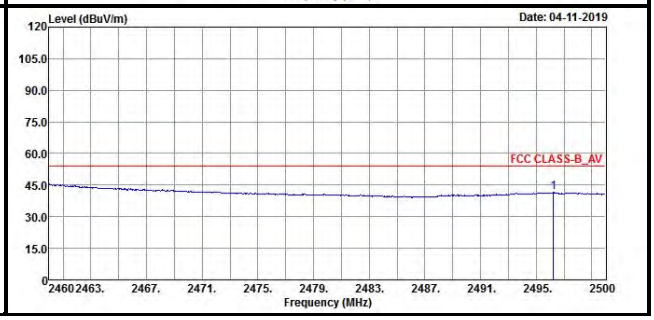
Horizontal





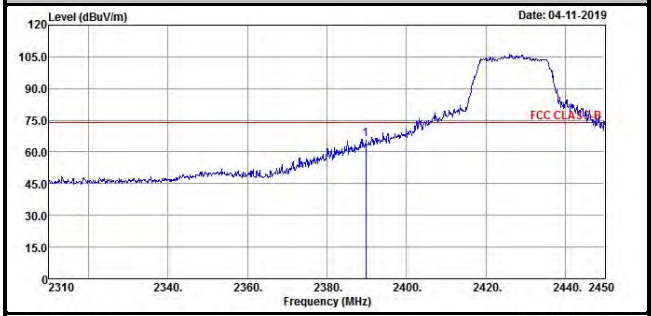
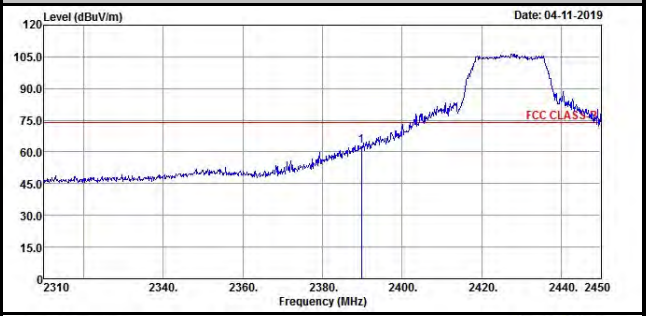
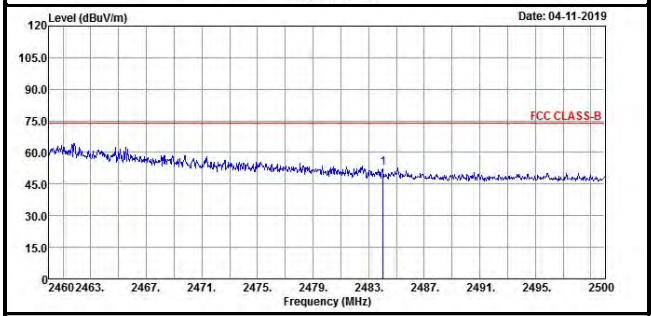
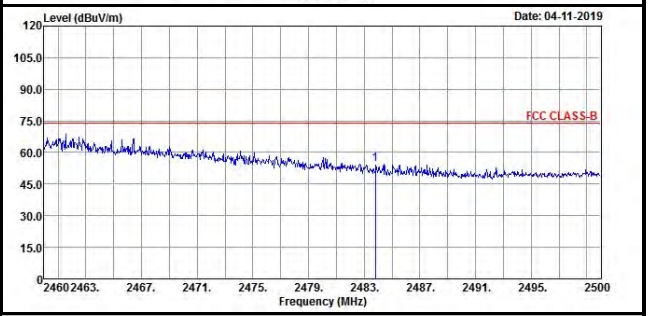
Vertical



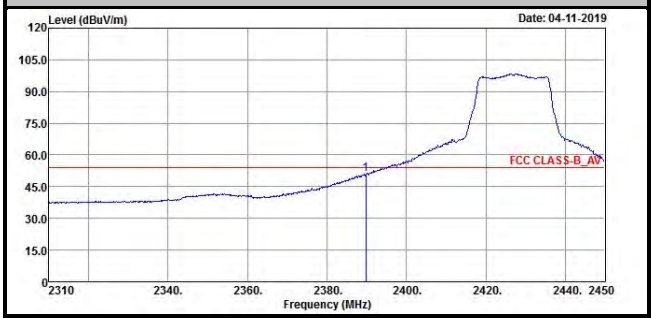
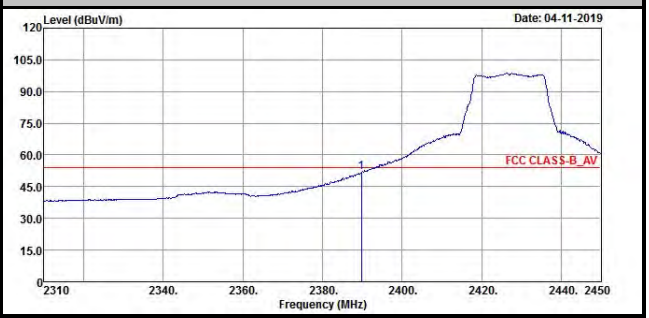
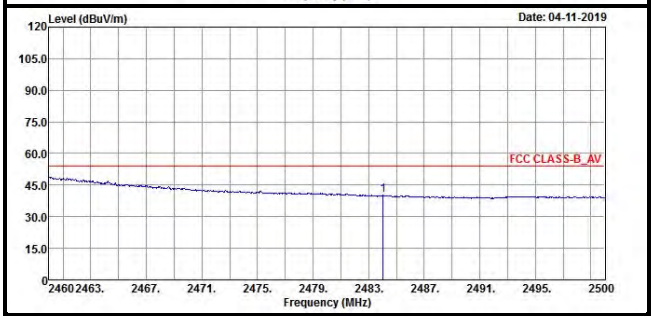
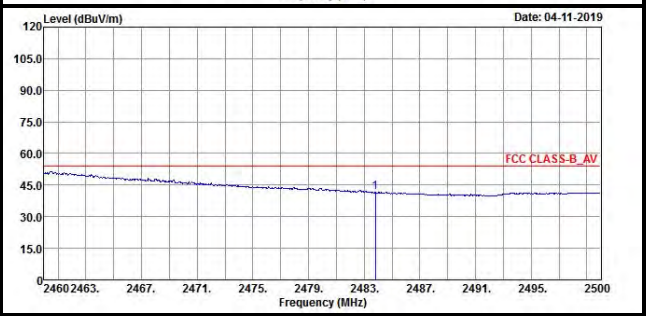


Ch 4

Peak

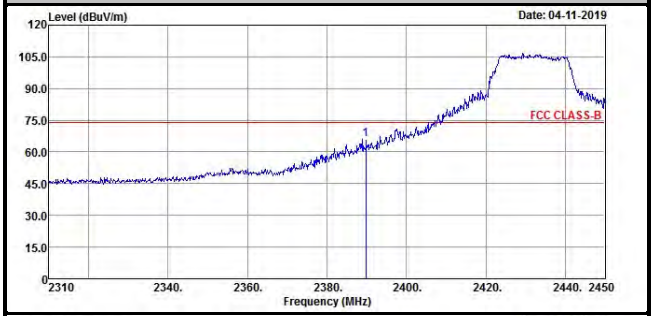
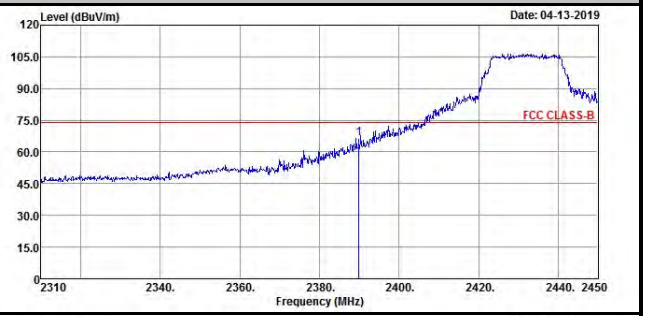
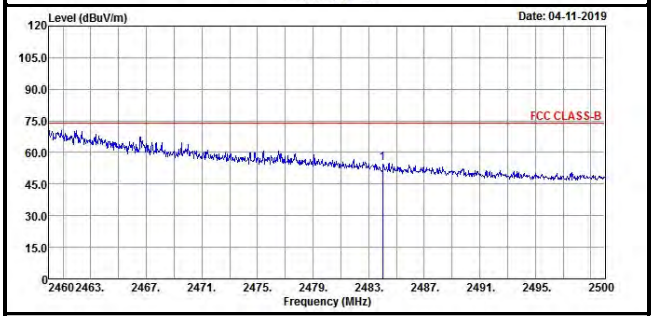
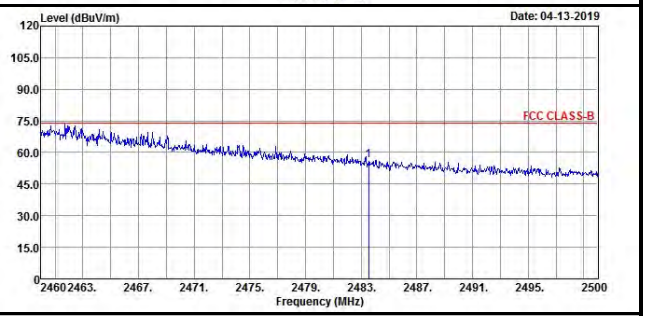
Horizontal	Vertical
	
	

Average

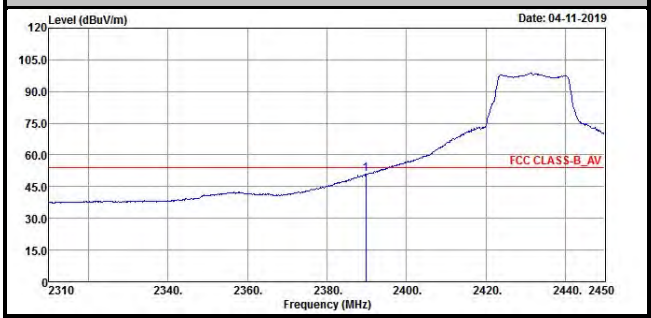
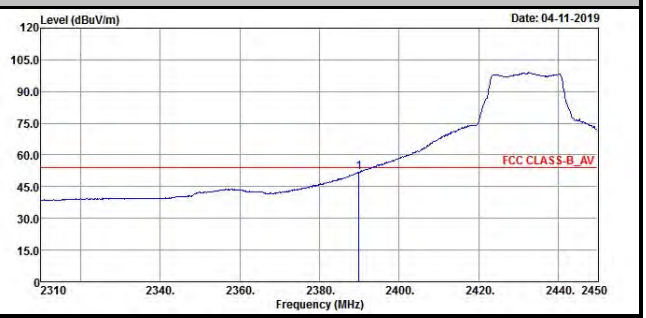
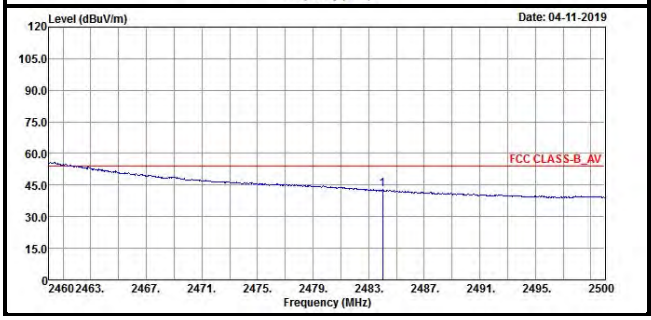
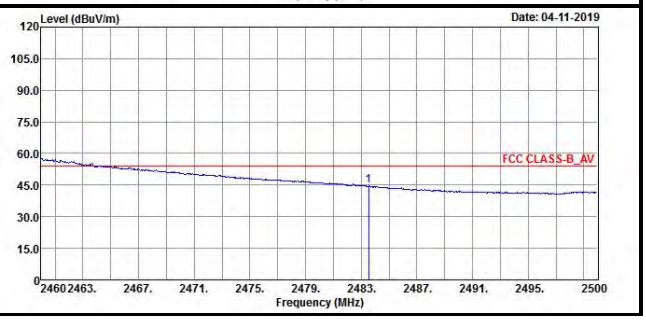
Horizontal	Vertical
	
	

Ch 5

Peak

Horizontal	Vertical
	
	

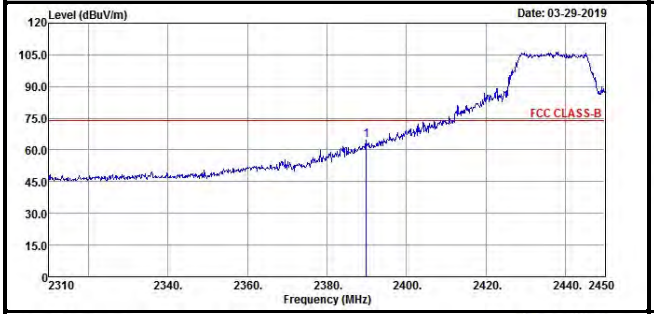
Average

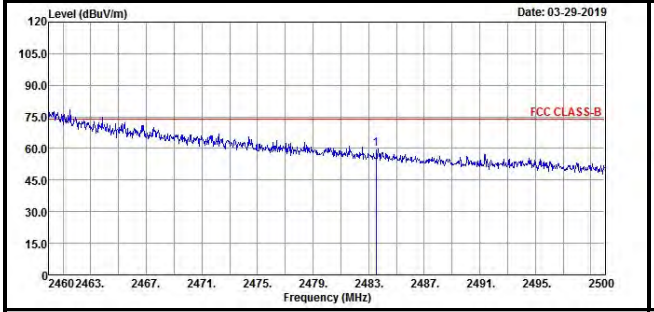
Horizontal	Vertical
	
	

Ch 6

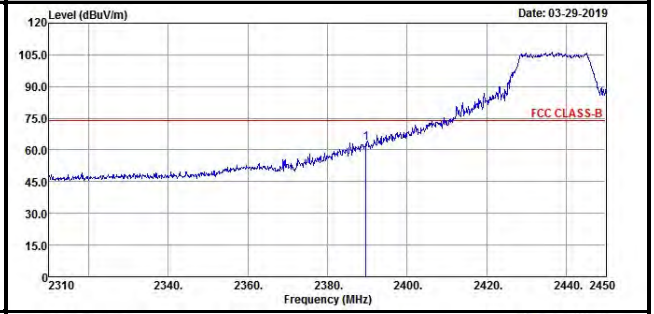
Peak

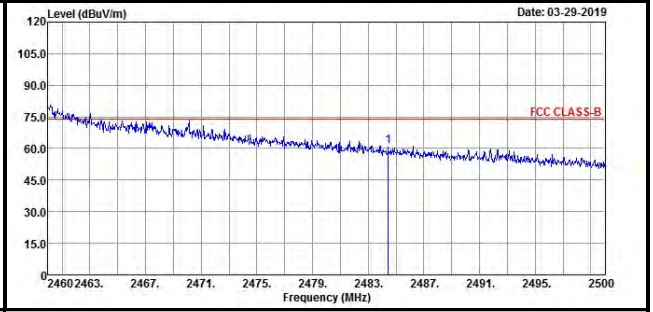
Horizontal





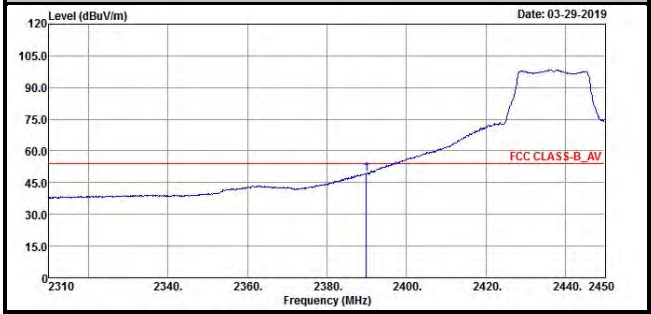
Vertical

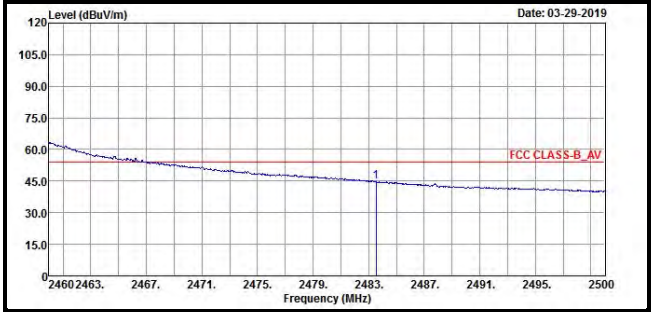




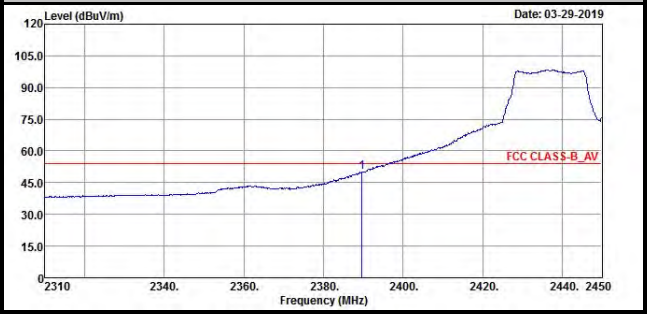
Average

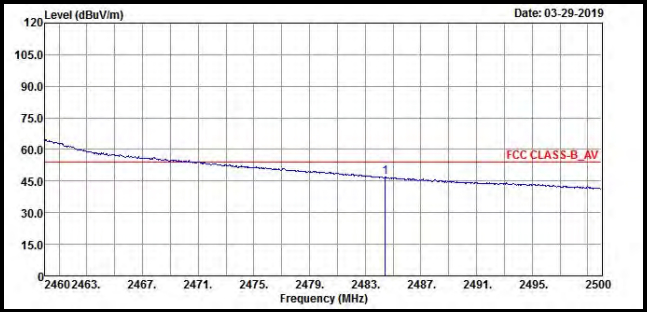
Horizontal





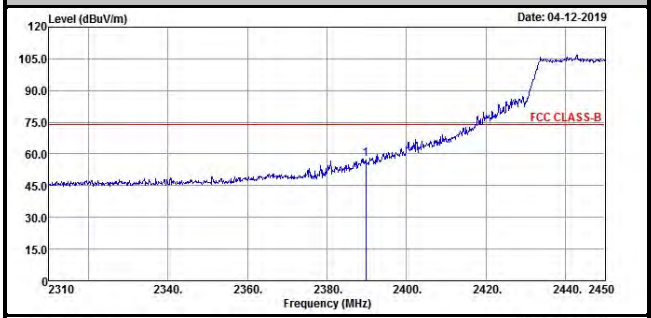
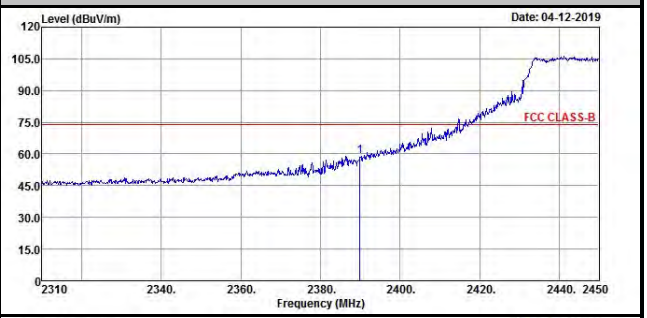
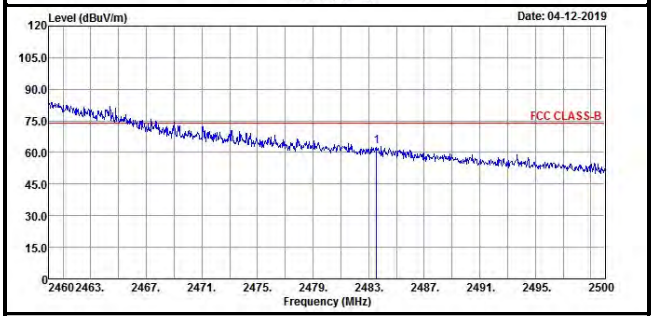
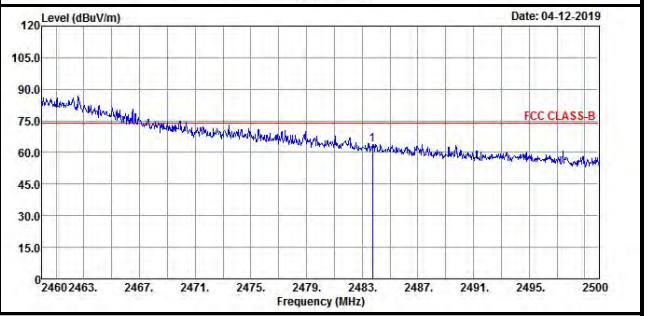
Vertical



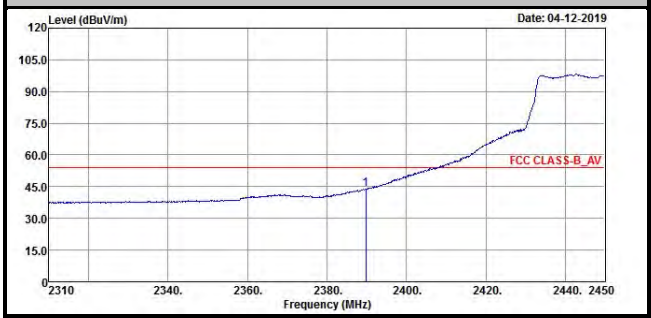
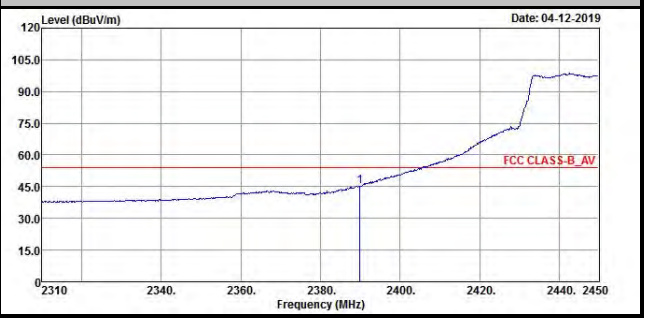
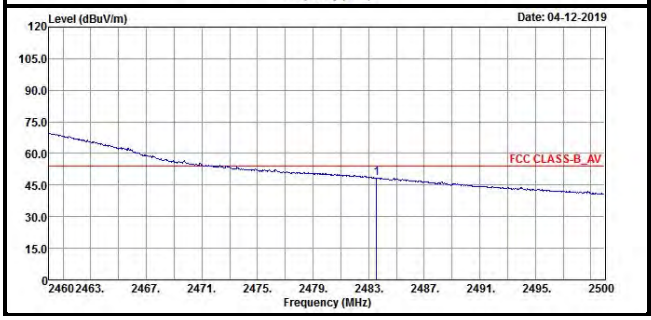
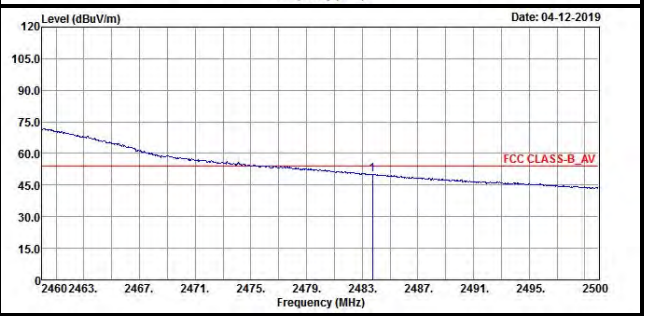


Ch 7

Peak

Horizontal	Vertical
	
	

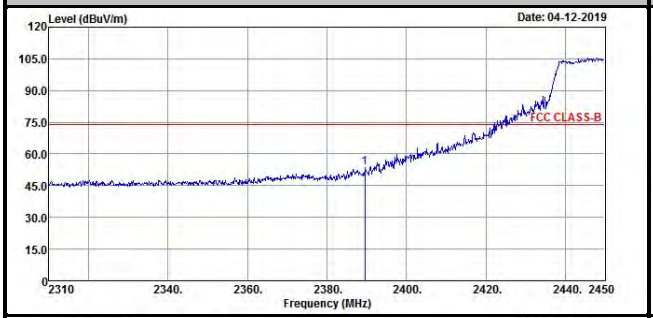
Average

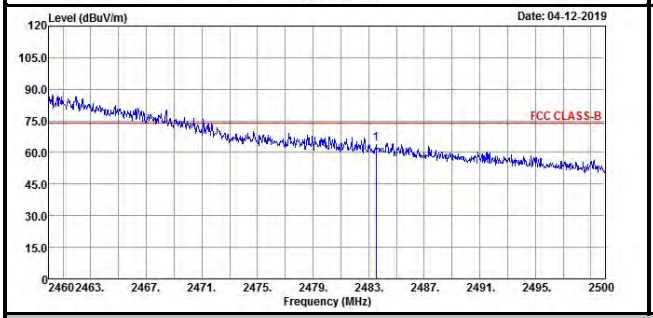
Horizontal	Vertical
	
	

Ch 8

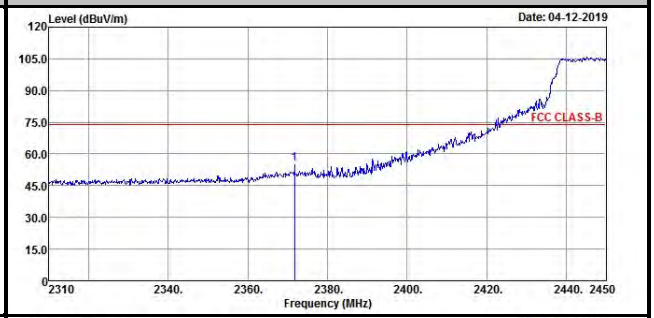
Peak

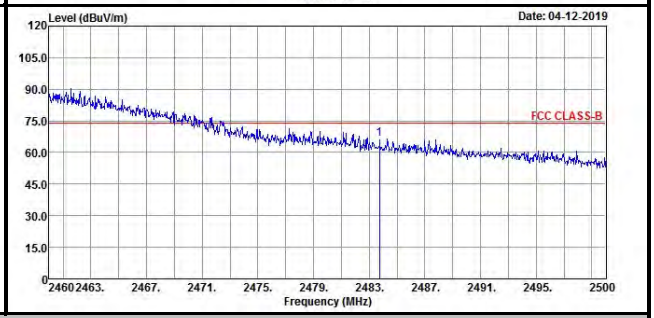
Horizontal





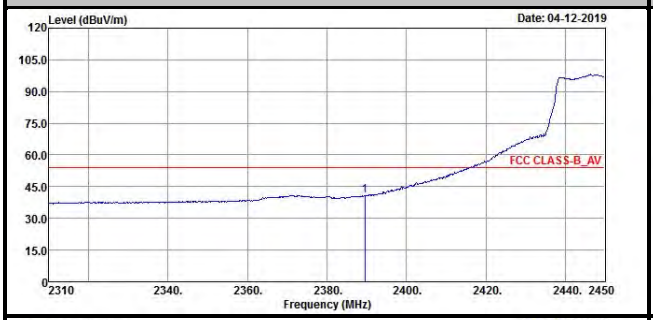
Vertical

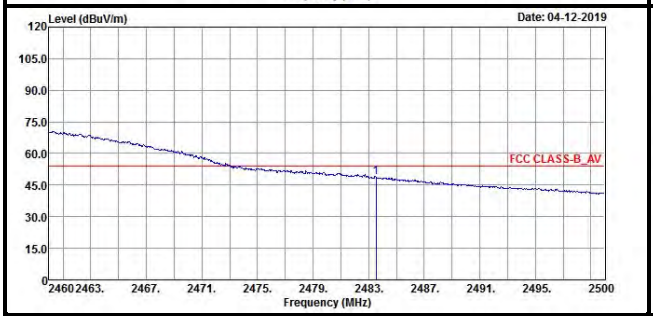




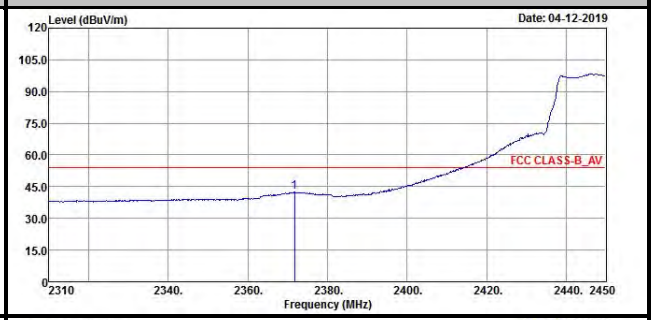
Average

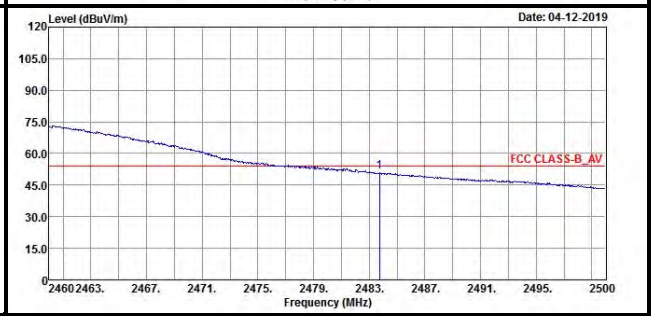
Horizontal





Vertical

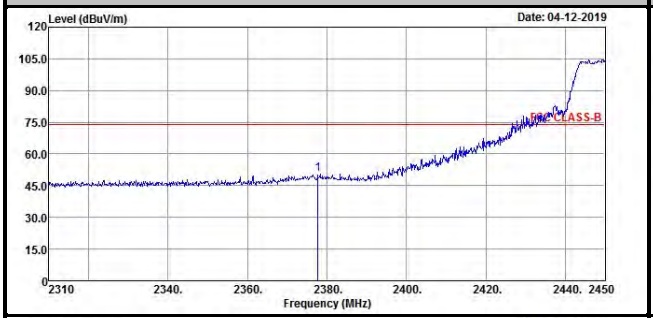


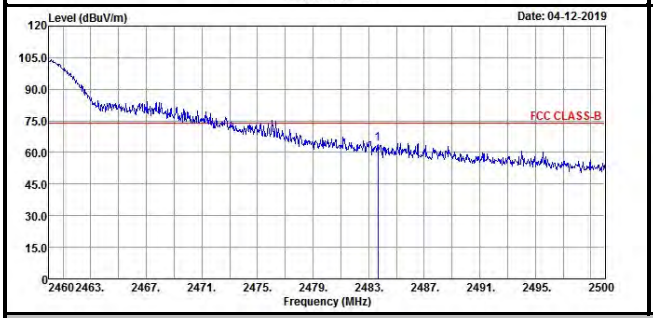


Ch 9

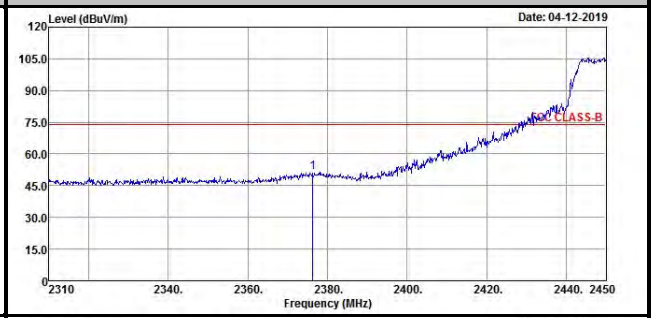
Peak

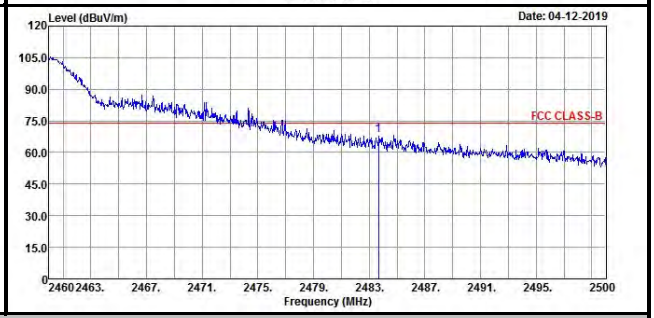
Horizontal





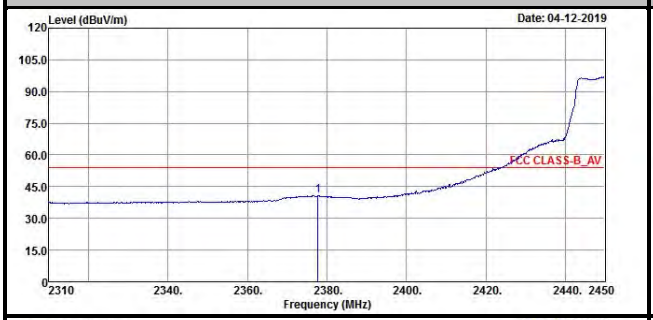
Vertical

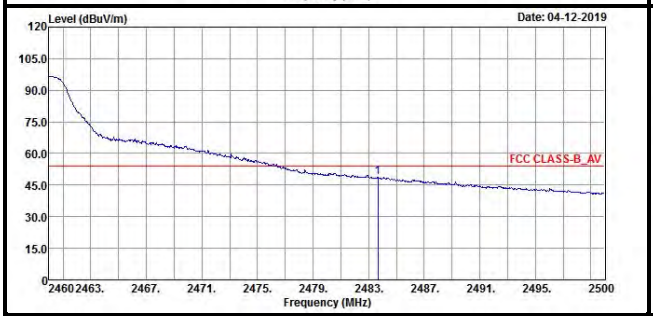




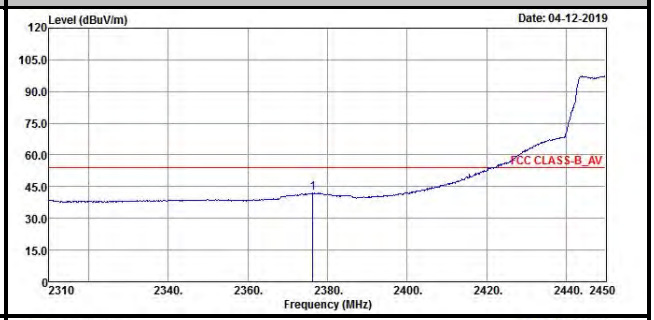
Average

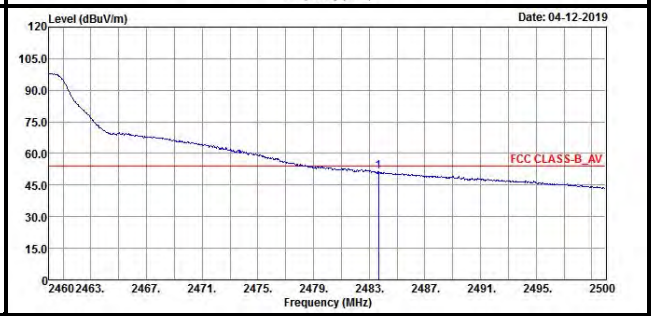
Horizontal





Vertical

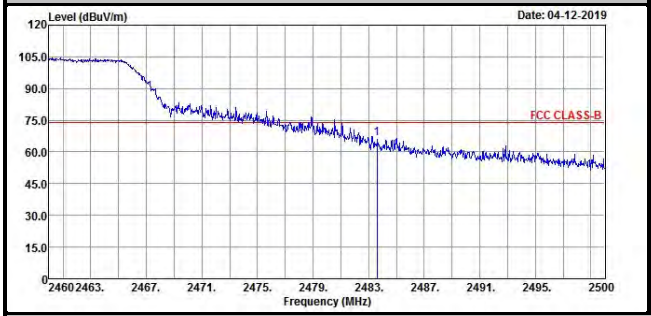




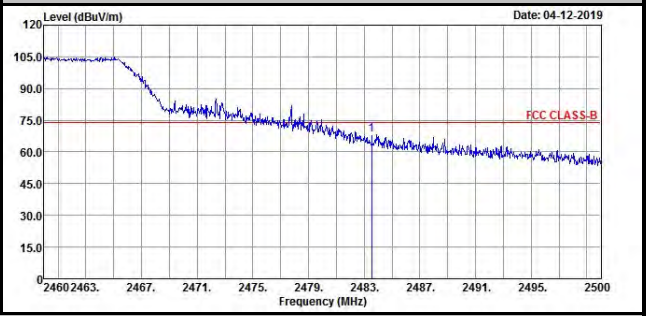
Ch 10

Peak

Horizontal

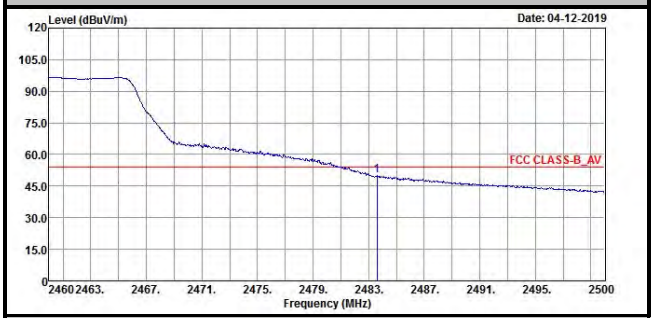


Vertical

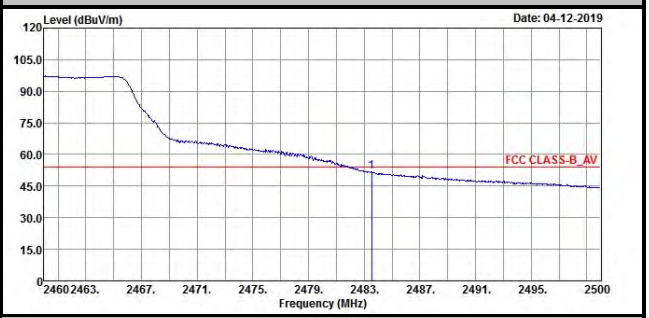


Average

Horizontal



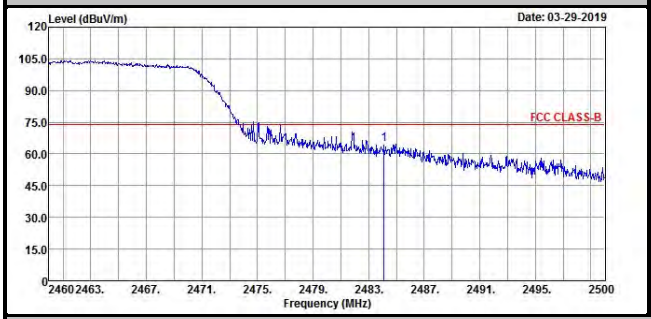
Vertical



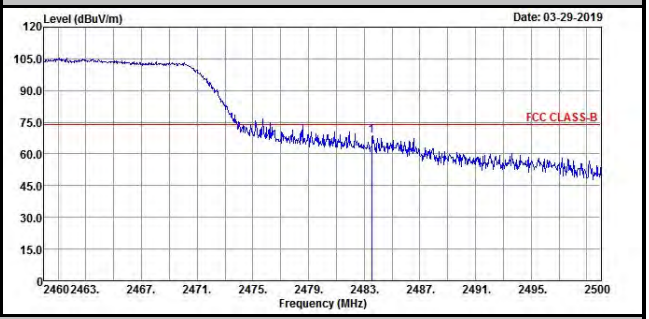
Ch 11

Peak

Horizontal

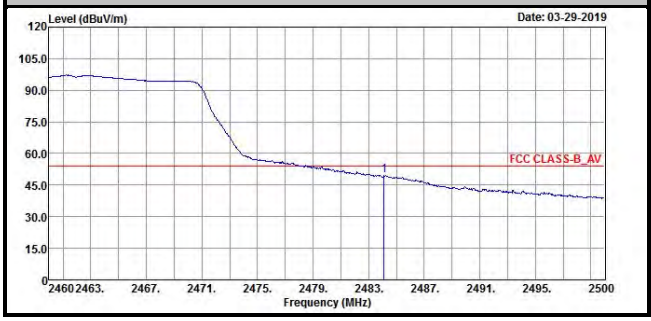


Vertical

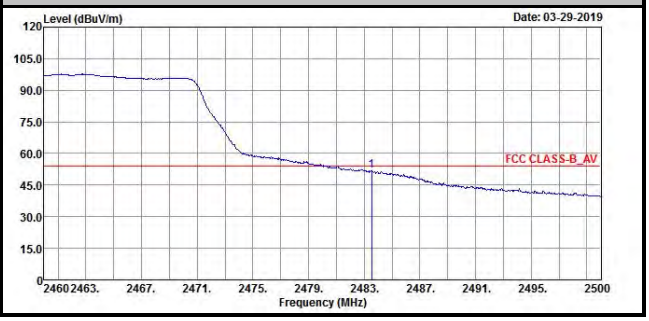


Average

Horizontal



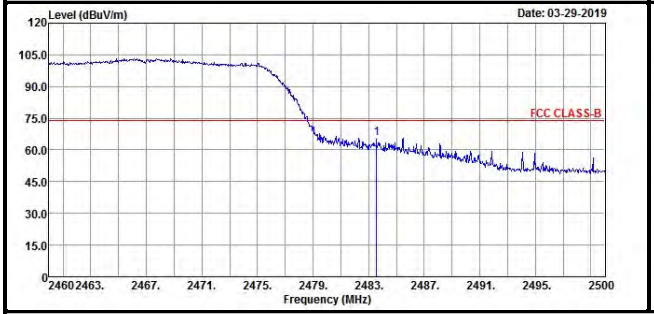
Vertical



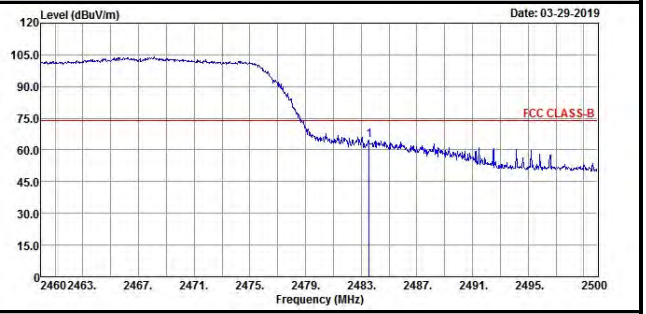
Ch 12

Peak

Horizontal



Vertical



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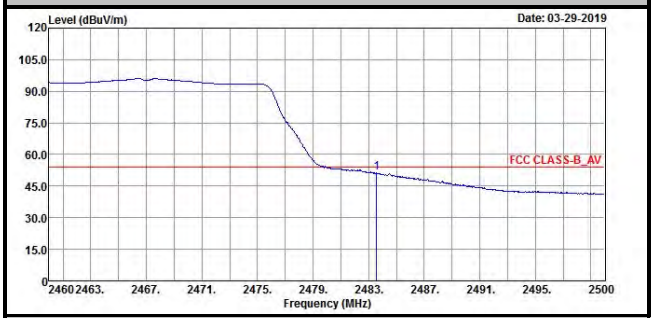

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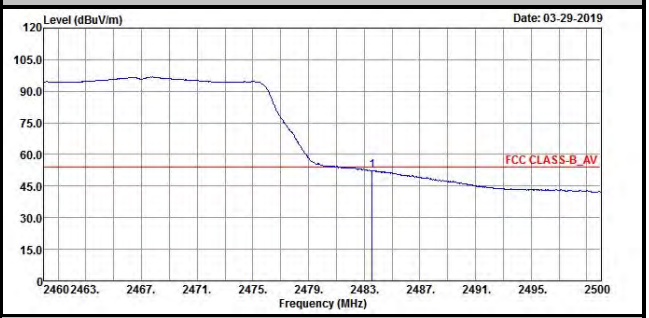
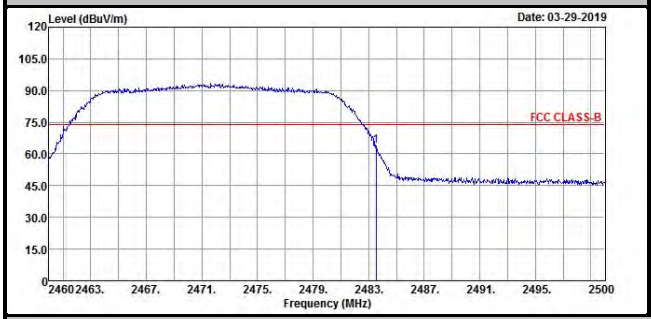


Ch 13

Peak

Horizontal



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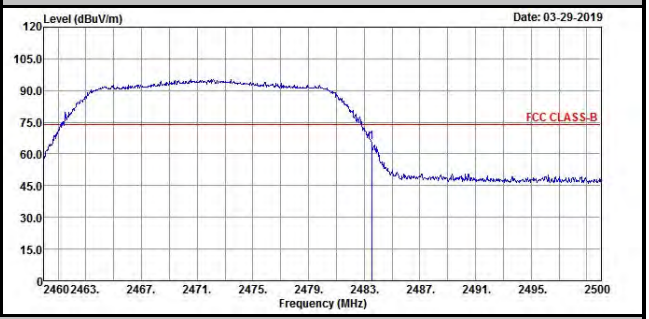

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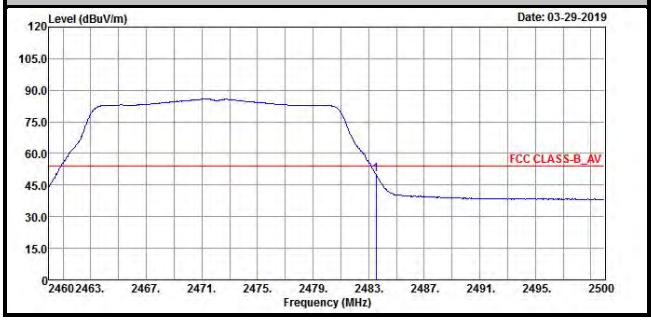

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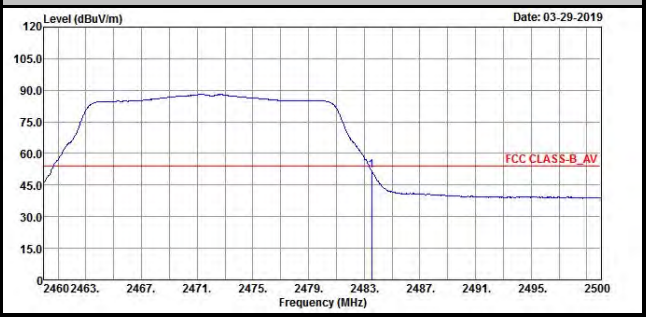

Appendix – Information of the Testing Laboratories

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

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

Lin Kou EMC/RF Lab
Tel: 886-2-26052180
Fax: 886-2-26051924

Hsin Chu EMC/RF/Telecom Lab
Tel: 886-3-6668565
Fax: 886-3-6668323

Hwa Ya EMC/RF/Safety Lab
Tel: 886-3-3183232
Fax: 886-3-3270892

Email: service.adt@tw.bureauveritas.com
Web Site: www.bureauveritas-adt.com

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

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