

## FCC Test Report

**Report No.:** RFBCIB-WTW-P21050220

**FCC ID:** 2AA3N-PT01

**Test Model:** PT01

**Received Date:** May 6, 2021

**Test Date:** May 20 to Aug. 9, 2021

**Issued Date:** Oct. 12, 2021

**Applicant:** Peloton Interactive Inc.

**Address:** 125 W 25th Street, 11th Floor, New York, NY, 10001, USA

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

**Lab Address:** No. 47-2, 14th Ling, Chia Pau Vil., Lin Kou Dist., New Taipei City, Taiwan

**FCC Registration /  
Designation Number:** 198487 / TW2021



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### Release Control Record

Issue No.	Description	Date Issued
RFBCIB-WTW-P21050220	Original release.	Oct. 12, 2021

## 1 Certificate of Conformity

**Product:** Peloton Guide (Set Top Box)

**Brand:** Peloton

**Test Model:** PT01

**Sample Status:** Engineering sample

**Applicant:** Peloton Interactive Inc.

**Test Date:** May 20 to Aug. 9, 2021

**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 :**

*Annie Chang*

**Date:**

Oct. 12, 2021

Annie Chang / Senior Specialist

**Approved by :**

*Rex Lai*

**Date:**

Oct. 12, 2021

Rex Lai / Associate Technical Manager

## 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 -5.38dB at 0.54662MHz.
15.205 / 15.209 / 15.247(d)	Radiated Emissions and Band Edge Measurement	PASS	Meet the requirement of limit. Minimum passing margin is -3.14dB at 2390.00MHz.
15.247(d)	Antenna Port Emission	PASS	Meet the requirement of limit.
15.247(a)(2)	6dB bandwidth	PASS	Meet the requirement of limit.
15.247(b)	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 IPEX MHF1 not a standard connector.

Note:

- For 2.4GHz band compliance with rule 15.247(d) of the band-edge items, the test plots were recorded in Annex A. Test Procedures refer to report 4.1.3.
- 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	Expanded Uncertainty (k=2) ( $\pm$ )
Conducted Emissions at mains ports	150kHz ~ 30MHz	2.94 dB
Conducted Emissions	9kHz ~ 40GHz	2.63 dB
Radiated Emissions up to 1 GHz	9kHz ~ 30MHz	2.61 dB
	30MHz ~ 1GHz	5.43 dB
Radiated Emissions above 1 GHz	Above 1GHz	5.42 dB

### 2.2 Modification Record

There were no modifications required for compliance.

### 3 General Information

#### 3.1 General Description of EUT

Product	Peloton Guide (Set Top Box)
Brand	Peloton
Test Model	PT01
Status of EUT	Engineering sample
Power Supply Rating	5Vdc from adapter
Modulation Type	CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM
Modulation Technology	DSSS, OFDM
Transfer Rate	802.11b: up to 11Mbps 802.11g: up to 54Mbps 802.11n: up to 300Mbps
Operating Frequency	2412MHz ~ 2462MHz
Number of Channel	802.11b/ 802.11g/802.11n (HT20): 11 802.11n (HT40): 7
Output Power	245.362mW
Antenna Type	Ant 0: PIFA antenna with 1.3dBi gain Ant 1: PIFA antenna with 1.85dBi gain
Antenna Connector	IPEX MHF1
Accessory Device	Adapter
Data Cable Supplied	Shielded HDMI cable (1.5m)

**Note:**

1. The EUT provides 2 completed transmitters and 2 receivers.

Modulation Mode	TX Function	RX Function
802.11b	2TX	2RX
802.11g	2TX	2RX
802.11n (HT20)	2TX	2RX
802.11n (HT40)	2TX	2RX

2. WLAN & Bluetooth technologies cannot transmit at same time.

3. The above Antenna information is declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications, the laboratory shall not be held responsible.

4. The EUT uses following adapter.

Adapter 1	
Brand	TenPao
Model	S015BGU0500300
Input Power	100-240Vac, 0.5A, 50-60Hz
Output Power	5Vdc, 3A
Power Line	AC 2 Pin, Shielded USB Type C cable (1.8m)
Adapter 2	
Brand	Chicony
Model	W20-015N1A
Input Power	100-240Vac, 0.5A, 50-60Hz
Output Power	5Vdc, 3A
Power Line	AC 2 Pin, Shielded USB Type C cable (1.8m)

The above two adapters were pre-test and **Adapter 1** was the worst case for final test.

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



### 3.2 Description of Test Modes

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

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

7 channels are provided for 802.11n (HT40):

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

### 3.2.1 Test Mode Applicability and Tested Channel Detail

EUT Configure Mode	Applicable To				Description
	RE≥1G	RE<1G	PLC	APCM	
A	-	√	√	-	Operating Mode (EUT + Adapter)
B	√	√	√	√	Operating Mode (EUT + Notebook)

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

#### **Radiated Emission Test (Above 1GHz):**

- 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)
B	802.11b	1 to 11	1, 6, 11	DSSS	DBPSK	1.0
	802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6.0
	802.11n (HT20)	1 to 11	1, 6, 11	OFDM	BPSK	6.5
	802.11n (HT40)	3 to 9	3, 6, 9	OFDM	BPSK	13.5

#### **Radiated Emission Test (Below 1GHz):**

- 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)
A & B	802.11g	1 to 11	11	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)
A & B	802.11g	1 to 11	11	OFDM	BPSK	6.0

**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)
B	802.11b	1 to 11	1, 6, 11	DSSS	DBPSK	1.0
	802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6.0
	802.11n (HT20)	1 to 11	1, 6, 11	OFDM	BPSK	6.5
	802.11n (HT40)	3 to 9	3, 6, 9	OFDM	BPSK	13.5

**Test Condition:**

Applicable To	EUT Configure Mode	Environmental Conditions	Input Power	Tested By
RE≥1G	B	24deg. C, 63%RH	120Vac, 60Hz (System)	Ian Chang
RE<1G	A	24deg. C, 72%RH	120Vac, 60Hz (Adapter)	Ian Chang
	B	24deg. C, 62%RH	120Vac, 60Hz (System)	Ian Chang
PLC	A	25deg. C, 75%RH	120Vac, 60Hz (Adapter)	Ian Chang
	B	25deg. C, 75%RH	120Vac, 60Hz (System)	Ian Chang
APCM	B	25deg. C, 76%RH	120Vac, 60Hz (System)	Pirar Hsieh

### 3.3 Duty Cycle of Test Signal

If duty cycle of test signal is  $\geq 98\%$ , duty factor is not required.  
 If duty cycle of test signal is  $< 98\%$ , duty factor shall be considered.

**802.11b:** Duty cycle = 100%

**802.11g:** Duty cycle =  $2.04/2.065 = 0.988$

**802.11n (HT20):** Duty cycle =  $1.906/1.929 = 0.988$

**802.11n (HT40):** Duty cycle =  $0.933/0.978 = 0.954$ , Duty factor =  $10 * \log(1/0.954) = 0.21$



### 3.4 Description of Support Units

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

ID	Product	Brand	Model No.	Serial No.	FCC ID	Remarks
A.	LCD MONITOR	ASUS	MX27U	JBLMRS007843	NA	Provided by Lab
B.	Notebook PC	Lenovo	81LG	PF1NF9V2	NA	Provided by Lab

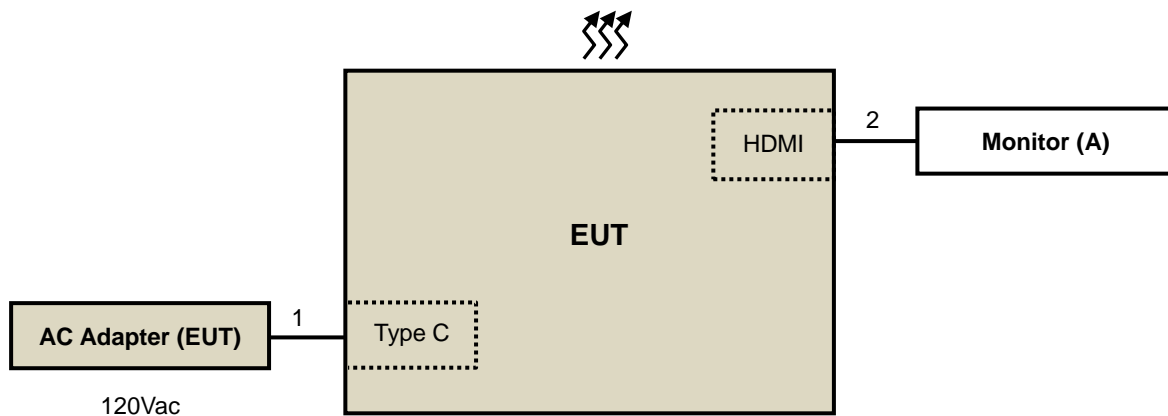
Note: All power cords of the above support units are non-shielded (1.8m).

ID	Cable Descriptions	Qty.	Length (m)	Shielding (Yes/No)	Cores (Qty.)	Remarks
1.	USB Type C cable	1	1.8	Y	0	Supplied by client
2.	HDMI cable	1	1.5	Y	0	Supplied by client

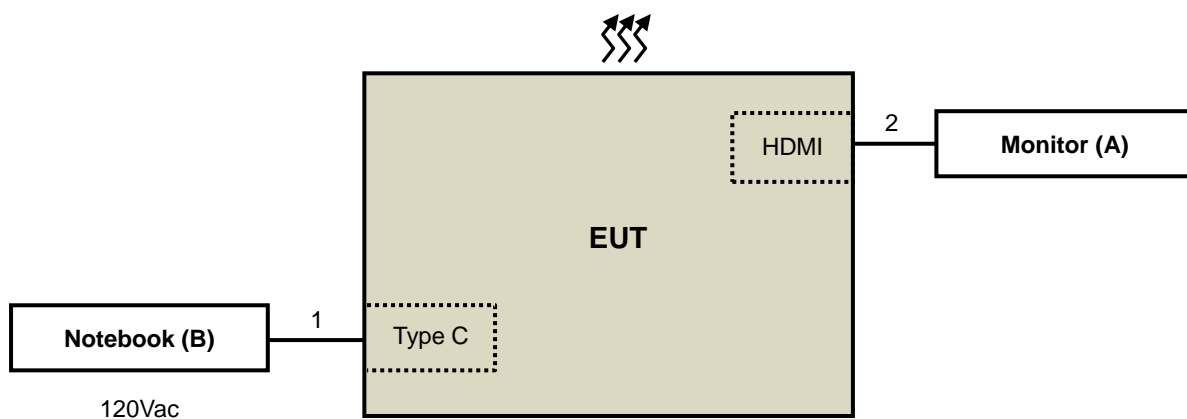
Note: The core(s) is(are) originally attached to the cable(s).

#### 3.4.1 Configuration of System under Test

##### Mode A:



##### Mode B:



### 3.5 General Description of Applied Standards and references

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

**Test standard:**

**FCC Part 15, Subpart C (15.247)**

**ANSI C63.10-2013**

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

**References Test Guidance:**

**KDB 558074 D01 15.247 Meas Guidance v05r02**

**KDB 662911 D01 Multiple Transmitter Output v02r01**

All test items have been performed as a reference to the above KDB test guidance.

## 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 20dB 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 1000MHz, 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 20dB under any condition of modulation.

#### 4.1.2 Test Instruments

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
HP Preamplifier	8447D	2432A03504	Feb. 18, 2021	Feb. 17, 2022
HP Preamplifier	8449B	3008A01201	Feb. 19, 2021	Feb. 18, 2022
MITEQ Preamplifier	AMF-6F-260400-33-8P	892164	Feb. 18, 2021	Feb. 17, 2022
Agilent TEST RECEIVER	N9038A	MY51210129	Mar. 12, 2021	Mar. 11, 2022
Schwarzbeck Antenna	VULB 9168	139	Nov. 6, 2020	Nov. 5, 2021
Schwarzbeck Horn Antenna	BBHA-9170	212	Nov. 22, 2020	Nov. 21, 2021
EMCO Horn Antenna	3115	00027024	Nov. 22, 2020	Nov.21, 2021
ADT. Turn Table	TT100	0306	NA	NA
ADT. Tower	AT100	0306	NA	NA
Software	Radiated_V7.6.15.9.5	NA	NA	NA
SUHNER RF cable With 4dB PAD	SF102	Cable-CH6-01	Jul. 9, 2020	Jul. 8, 2021
			Jul. 8, 2021	Jul. 7, 2022
EMEC RF cable With 3/4dB PAD	EM102-KMKM	01	Aug. 21, 2020	Aug. 20, 2021
KEYSIGHT MIMO Powermeasurement Test set	U2021XA	U2021XA-001	Jun. 16, 2020	Jun. 15, 2021
			Jun. 16, 2021	Jun. 15, 2022
Loop Antenna EMCI	LPA600	270	Aug. 23, 2019	Aug. 22, 2021
EMCO Horn Antenna	3115	00028257	Nov. 22, 2020	Nov. 21, 2021
Highpass filter Wainwright Instruments	WHK 3.1/18G-10SS	SN 8	NA	NA
ROHDE & SCHWARZ Spectrum Analyzer	FSV40	101042	Sep. 8, 2020	Sep. 7, 2021
Anritsu Power Sensor	MA2411B	0738404	Apr. 15, 2021	Apr. 14, 2022
Anritsu Power Meter	ML2495A	0842014	Apr. 14, 2021	Apr. 13, 2022

- NOTE:**
1. The calibration interval of the above test instruments is 12/24 months. And the calibrations are traceable to NML/ROC and NIST/USA.
  2. The horn antenna and HP preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.
  3. The test was performed in Chamber No. 6.
  4. Tested Date: May 20 to Aug. 9, 2021



#### 4.1.3 Test Procedures

##### **For Radiated emission below 30MHz**

- 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 9kHz at frequency below 30MHz.

##### **For Radiated emission above 30MHz**

- a. The EUT was placed on the top of a rotating table 0.8 meters (for 30MHz ~ 1GHz) / 1.5 meters (for above 1GHz) 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 detects function and specified bandwidth with maximum hold mode when the test frequency is above 1 GHz. If the peak reading value also meets average limit, measurement with the average detector is unnecessary.

##### **Note:**

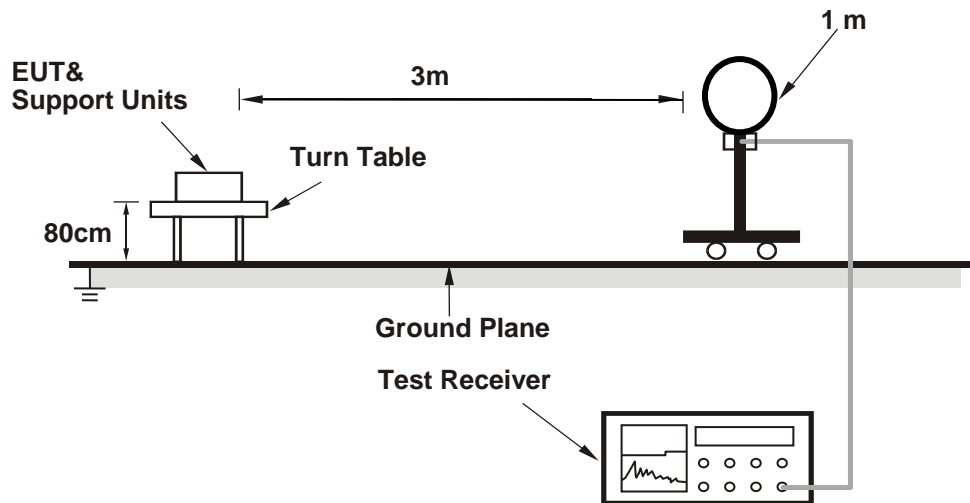
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is  $\geq 1/T$  (Duty cycle < 98%) or 10Hz (Duty cycle  $\geq 98\%$ ) for Average detection (AV) at frequency above 1GHz.  
(802.11b: RBW = 1MHz, VBW = 10Hz; 802.11g: RBW = 1MHz, VBW = 10Hz;  
802.11n (HT20): RBW = 1MHz, VBW = 10Hz; 802.11n (HT40): RBW = 1MHz, VBW = 1.1kHz)
4. All modes of operation were investigated and the worst-case emissions are reported.

#### 4.1.4 Deviation from Test Standard

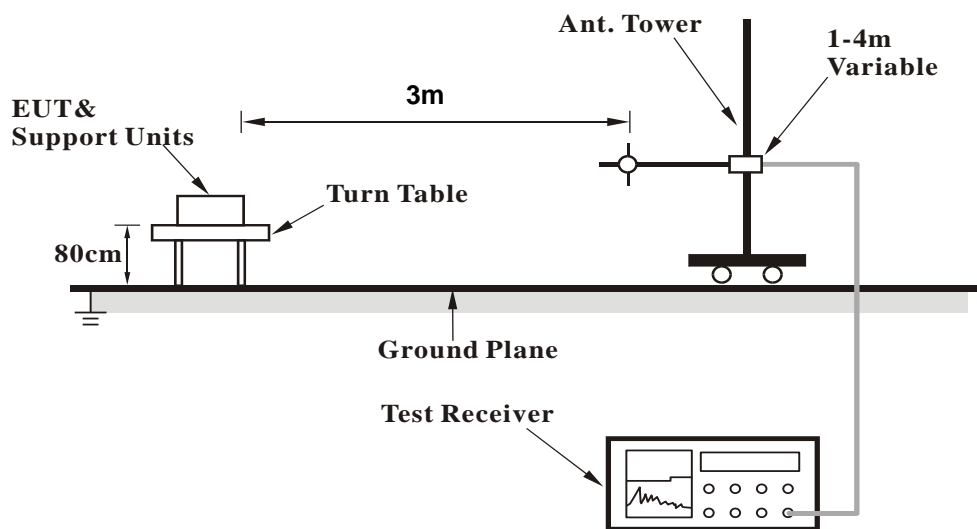
No deviation.

#### 4.1.5 Test Setup

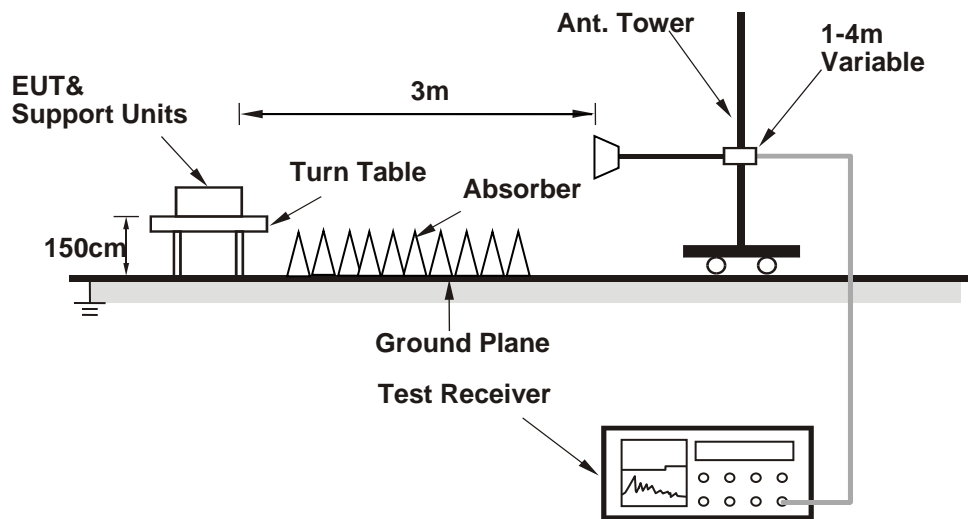
##### For Radiated emission below 30MHz



##### For Radiated emission 30MHz to 1GHz



**For Radiated emission above 1GHz**



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

**4.1.6 EUT Operating Conditions**

- a. Connected the EUT to Adapter or Notebook.
- b. Set the EUT under transmission condition continuously at specific channel frequency continuously.

4.1.7 Test Results

**ABOVE 1GHz DATA**

**Mode B**

<b>RF Mode</b>	TX 802.11b	<b>Channel</b>	CH 1 : 2412 MHz
<b>Frequency Range</b>	1GHz ~ 25GHz	<b>Detector Function</b>	Peak (PK) Average (AV)

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2390.00	55.87 PK	74.00	-18.13	3.28 H	215	58.15	-2.28
2	2390.00	45.30 AV	54.00	-8.70	3.28 H	215	47.58	-2.28
3	*2412.00	106.60 PK			3.28 H	215	108.79	-2.19
4	*2412.00	104.49 AV			3.28 H	215	106.68	-2.19
5	4824.00	54.81 PK	74.00	-19.19	1.01 H	273	49.15	5.66
6	4824.00	48.64 AV	54.00	-5.36	1.01 H	273	42.98	5.66
7	#7236.00	54.13 PK	86.60	-32.47	1.54 H	126	43.21	10.92
8	#7236.00	42.76 AV	84.49	-41.73	1.54 H	126	31.84	10.92
9	#9648.00	59.33 PK	86.60	-27.27	1.32 H	13	45.97	13.36
10	#9648.00	52.26 AV	84.49	-32.23	1.32 H	13	38.90	13.36

Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2390.00	58.76 PK	74.00	-15.24	1.27 V	194	61.04	-2.28
2	2390.00	45.50 AV	54.00	-8.50	1.27 V	194	47.78	-2.28
3	*2412.00	110.16 PK			1.27 V	194	112.35	-2.19
4	*2412.00	108.15 AV			1.27 V	194	110.34	-2.19
5	4824.00	53.21 PK	74.00	-20.79	1.41 V	221	47.55	5.66
6	4824.00	45.83 AV	54.00	-8.17	1.41 V	221	40.17	5.66
7	#7236.00	53.03 PK	90.16	-37.13	1.95 V	254	42.11	10.92
8	#7236.00	41.90 AV	88.15	-46.25	1.95 V	254	30.98	10.92
9	#9648.00	58.10 PK	90.16	-32.06	1.42 V	23	44.74	13.36
10	#9648.00	50.87 AV	88.15	-37.28	1.42 V	23	37.51	13.36

**Remarks:**

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " \* ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

<b>RF Mode</b>	TX 802.11b	<b>Channel</b>	CH 6 : 2437 MHz
<b>Frequency Range</b>	1GHz ~ 25GHz	<b>Detector Function</b>	Peak (PK) Average (AV)

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2437.00	104.64 PK			2.41 H	265	106.79	-2.15
2	*2437.00	102.70 AV			2.41 H	265	104.85	-2.15
3	4874.00	53.76 PK	74.00	-20.24	1.89 H	275	48.07	5.69
4	4874.00	46.98 AV	54.00	-7.02	1.89 H	275	41.29	5.69
5	7311.00	54.09 PK	74.00	-19.91	1.57 H	164	42.49	11.60
6	7311.00	43.20 AV	54.00	-10.80	1.57 H	164	31.60	11.60
7	#9748.00	57.34 PK	84.64	-27.30	2.43 H	296	43.69	13.65
8	#9748.00	46.47 AV	82.70	-36.23	2.43 H	296	32.82	13.65

Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2437.00	109.13 PK			1.24 V	192	111.28	-2.15
2	*2437.00	107.22 AV			1.24 V	192	109.37	-2.15
3	4874.00	52.73 PK	74.00	-21.27	1.58 V	220	47.04	5.69
4	4874.00	45.87 AV	54.00	-8.13	1.58 V	220	40.18	5.69
5	7311.00	53.55 PK	74.00	-20.45	1.78 V	45	41.95	11.60
6	7311.00	42.54 AV	54.00	-11.46	1.78 V	45	30.94	11.60
7	#9748.00	56.17 PK	89.13	-32.96	1.16 V	330	42.52	13.65
8	#9748.00	45.74 AV	87.22	-41.48	1.16 V	330	32.09	13.65

**Remarks:**

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " \* ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

<b>RF Mode</b>	TX 802.11b	<b>Channel</b>	CH 11 : 2462 MHz
<b>Frequency Range</b>	1GHz ~ 25GHz	<b>Detector Function</b>	Peak (PK) Average (AV)

**Antenna Polarity & Test Distance : Horizontal at 3 m**

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2462.00	106.79 PK			3.19 H	228	108.85	-2.06
2	*2462.00	104.68 AV			3.19 H	228	106.74	-2.06
3	2483.50	58.07 PK	74.00	-15.93	3.19 H	228	60.01	-1.94
4	2483.50	44.54 AV	54.00	-9.46	3.19 H	228	46.48	-1.94
5	4924.00	54.81 PK	74.00	-19.19	1.87 H	256	49.04	5.77
6	4924.00	48.18 AV	54.00	-5.82	1.87 H	256	42.41	5.77
7	7386.00	54.47 PK	74.00	-19.53	1.69 H	287	43.06	11.41
8	7386.00	43.56 AV	54.00	-10.44	1.69 H	287	32.15	11.41
9	#9848.00	59.15 PK	86.79	-27.64	3.32 H	293	44.97	14.18
10	#9848.00	47.40 AV	84.68	-37.28	3.32 H	293	33.22	14.18

**Antenna Polarity & Test Distance : Vertical at 3 m**

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2462.00	110.49 PK			1.25 V	195	112.55	-2.06
2	*2462.00	108.48 AV			1.25 V	195	110.54	-2.06
3	2483.50	59.69 PK	74.00	-14.31	1.25 V	195	61.63	-1.94
4	2483.50	47.11 AV	54.00	-6.89	1.25 V	195	49.05	-1.94
5	4924.00	53.86 PK	74.00	-20.14	1.94 V	265	48.09	5.77
6	4924.00	46.84 AV	54.00	-7.16	1.94 V	265	41.07	5.77
7	7386.00	53.22 PK	74.00	-20.78	2.24 V	156	41.81	11.41
8	7386.00	42.55 AV	54.00	-11.45	2.24 V	156	31.14	11.41
9	#9848.00	57.90 PK	90.49	-32.59	1.21 V	329	43.72	14.18
10	#9848.00	47.03 AV	88.48	-41.45	1.21 V	329	32.85	14.18

**Remarks:**

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " \* ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

<b>RF Mode</b>	TX 802.11g	<b>Channel</b>	CH 1 : 2412 MHz
<b>Frequency Range</b>	1GHz ~ 25GHz	<b>Detector Function</b>	Peak (PK) Average (AV)

**Antenna Polarity & Test Distance : Horizontal at 3 m**

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2390.00	63.79 PK	74.00	-10.21	1.51 H	252	66.07	-2.28
2	2390.00	49.67 AV	54.00	-4.33	1.51 H	252	51.95	-2.28
3	*2412.00	109.28 PK			1.51 H	252	111.47	-2.19
4	*2412.00	99.99 AV			1.51 H	252	102.18	-2.19
5	4824.00	51.56 PK	74.00	-22.44	1.63 H	236	45.90	5.66
6	4824.00	39.86 AV	54.00	-14.14	1.63 H	236	34.20	5.66
7	#7236.00	55.00 PK	89.28	-34.28	1.84 H	174	44.08	10.92
8	#7236.00	43.98 AV	79.99	-36.01	1.84 H	174	33.06	10.92
9	#9648.00	59.58 PK	89.28	-29.70	2.58 H	55	46.22	13.36
10	#9648.00	51.91 AV	79.99	-28.08	2.58 H	55	38.55	13.36

**Antenna Polarity & Test Distance : Vertical at 3 m**

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2390.00	64.04 PK	74.00	-9.96	1.11 V	201	66.32	-2.28
2	2390.00	50.67 AV	54.00	-3.33	1.11 V	201	52.95	-2.28
3	*2412.00	110.95 PK			1.11 V	201	113.14	-2.19
4	*2412.00	103.15 AV			1.11 V	201	105.34	-2.19
5	4824.00	50.55 PK	74.00	-23.45	1.64 V	235	44.89	5.66
6	4824.00	39.05 AV	54.00	-14.95	1.64 V	235	33.39	5.66
7	#7236.00	54.30 PK	90.95	-36.65	1.96 V	253	43.38	10.92
8	#7236.00	42.50 AV	83.15	-40.65	1.96 V	253	31.58	10.92
9	#9648.00	58.83 PK	90.95	-32.12	3.81 V	226	45.47	13.36
10	#9648.00	50.74 AV	83.15	-32.41	3.81 V	226	37.38	13.36

**Remarks:**

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " \* ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

<b>RF Mode</b>	TX 802.11g	<b>Channel</b>	CH 6 : 2437 MHz
<b>Frequency Range</b>	1GHz ~ 25GHz	<b>Detector Function</b>	Peak (PK) Average (AV)

**Antenna Polarity & Test Distance : Horizontal at 3 m**

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2437.00	108.30 PK			1.49 H	258	110.45	-2.15
2	*2437.00	101.70 AV			1.49 H	258	103.85	-2.15
3	4874.00	51.53 PK	74.00	-22.47	1.87 H	111	45.84	5.69
4	4874.00	39.82 AV	54.00	-14.18	1.87 H	111	34.13	5.69
5	7311.00	54.91 PK	74.00	-19.09	1.96 H	263	43.31	11.60
6	7311.00	44.24 AV	54.00	-9.76	1.96 H	263	32.64	11.60
7	#9748.00	57.24 PK	88.30	-31.06	2.49 H	66	43.59	13.65
8	#9748.00	48.55 AV	81.70	-33.15	2.49 H	66	34.90	13.65

**Antenna Polarity & Test Distance : Vertical at 3 m**

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2437.00	110.97 PK			1.43 V	181	113.12	-2.15
2	*2437.00	102.40 AV			1.43 V	181	104.55	-2.15
3	4874.00	50.43 PK	74.00	-23.57	1.67 V	134	44.74	5.69
4	4874.00	38.80 AV	54.00	-15.20	1.67 V	134	33.11	5.69
5	7311.00	54.30 PK	74.00	-19.70	1.85 V	254	42.70	11.60
6	7311.00	43.30 AV	54.00	-10.70	1.85 V	254	31.70	11.60
7	#9748.00	56.10 PK	90.97	-34.87	3.96 V	234	42.45	13.65
8	#9748.00	47.53 AV	82.40	-34.87	3.96 V	234	33.88	13.65

**Remarks:**

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " \* ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.



<b>RF Mode</b>	TX 802.11g	<b>Channel</b>	CH 11 : 2462 MHz
<b>Frequency Range</b>	1GHz ~ 25GHz	<b>Detector Function</b>	Peak (PK) Average (AV)

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2462.00	108.36 PK			2.25 H	243	110.42	-2.06
2	*2462.00	99.56 AV			2.25 H	243	101.62	-2.06
3	2483.50	55.11 PK	74.00	-18.89	2.25 H	243	57.05	-1.94
4	2483.50	45.07 AV	54.00	-8.93	2.25 H	243	47.01	-1.94
5	4924.00	46.51 PK	74.00	-27.49	2.33 H	246	40.74	5.77
6	4924.00	34.82 AV	54.00	-19.18	2.33 H	246	29.05	5.77
7	7386.00	50.52 PK	74.00	-23.48	2.54 H	175	39.11	11.41
8	7386.00	39.64 AV	54.00	-14.36	2.54 H	175	28.23	11.41
9	#9848.00	56.20 PK	88.36	-32.16	2.16 H	54	42.02	14.18
10	#9848.00	47.54 AV	79.56	-32.02	2.16 H	54	33.36	14.18

Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2462.00	111.69 PK			2.25 V	172	113.75	-2.06
2	*2462.00	102.38 AV			2.25 V	172	104.44	-2.06
3	2483.50	64.37 PK	74.00	-9.63	2.25 V	172	66.31	-1.94
4	2483.50	50.81 AV	54.00	-3.19	2.25 V	172	52.75	-1.94
5	4924.00	46.44 PK	74.00	-27.56	1.77 V	236	40.67	5.77
6	4924.00	35.33 AV	54.00	-18.67	1.77 V	236	29.56	5.77
7	7386.00	50.37 PK	74.00	-23.63	1.54 V	163	38.96	11.41
8	7386.00	39.54 AV	54.00	-14.46	1.54 V	163	28.13	11.41
9	#9848.00	56.55 PK	91.69	-35.14	1.21 V	336	42.37	14.18
10	#9848.00	47.74 AV	82.38	-36.64	1.21 V	336	33.56	14.18

**Remarks:**

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " \* ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

<b>RF Mode</b>	TX 802.11n (HT20)	<b>Channel</b>	CH 1 : 2412 MHz
<b>Frequency Range</b>	1GHz ~ 25GHz	<b>Detector Function</b>	Peak (PK) Average (AV)

**Antenna Polarity & Test Distance : Horizontal at 3 m**

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2390.00	60.00 PK	74.00	-14.00	1.07 H	356	62.28	-2.28
2	2390.00	49.92 AV	54.00	-4.08	1.07 H	356	52.20	-2.28
3	*2412.00	107.71 PK			1.07 H	356	109.90	-2.19
4	*2412.00	99.41 AV			1.07 H	356	101.60	-2.19
5	4824.00	43.73 PK	74.00	-30.27	2.36 H	147	38.07	5.66
6	4824.00	33.77 AV	54.00	-20.23	2.36 H	147	28.11	5.66
7	#7236.00	49.64 PK	87.71	-38.07	2.54 H	299	38.72	10.92
8	#7236.00	38.10 AV	79.41	-41.31	2.54 H	299	27.18	10.92
9	#9648.00	57.38 PK	87.71	-30.33	1.46 H	164	44.02	13.36
10	#9648.00	50.58 AV	79.41	-28.83	1.46 H	164	37.22	13.36

**Antenna Polarity & Test Distance : Vertical at 3 m**

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2390.00	61.27 PK	74.00	-12.73	1.71 V	242	63.55	-2.28
2	<b>2390.00</b>	<b>50.86 AV</b>	<b>54.00</b>	<b>-3.14</b>	<b>1.71 V</b>	<b>242</b>	<b>53.14</b>	<b>-2.28</b>
3	*2412.00	108.70 PK			1.71 V	242	110.89	-2.19
4	*2412.00	99.91 AV			1.71 V	242	102.10	-2.19
5	4824.00	43.83 PK	74.00	-30.17	1.96 V	258	38.17	5.66
6	4824.00	34.09 AV	54.00	-19.91	1.96 V	258	28.43	5.66
7	#7236.00	48.95 PK	88.70	-39.75	2.25 V	162	38.03	10.92
8	#7236.00	38.50 AV	79.91	-41.41	2.25 V	162	27.58	10.92
9	#9648.00	58.85 PK	88.70	-29.85	2.30 V	64	45.49	13.36
10	#9648.00	52.75 AV	79.91	-27.16	2.30 V	64	39.39	13.36

**Remarks:**

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " \* ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

<b>RF Mode</b>	TX 802.11n (HT20)	<b>Channel</b>	CH 6 : 2437 MHz
<b>Frequency Range</b>	1GHz ~ 25GHz	<b>Detector Function</b>	Peak (PK) Average (AV)

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2437.00	108.26 PK			1.53 H	251	110.41	-2.15
2	*2437.00	100.76 AV			1.53 H	251	102.91	-2.15
3	4874.00	51.42 PK	74.00	-22.58	1.66 H	222	45.73	5.69
4	4874.00	39.51 AV	54.00	-14.49	1.66 H	222	33.82	5.69
5	7311.00	55.20 PK	74.00	-18.80	2.25 H	168	43.60	11.60
6	7311.00	44.18 AV	54.00	-9.82	2.25 H	168	32.58	11.60
7	#9748.00	57.54 PK	88.26	-30.72	2.51 H	48	43.89	13.65
8	#9748.00	50.45 AV	80.76	-30.31	2.51 H	48	36.80	13.65

Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2437.00	110.99 PK			1.22 V	185	113.14	-2.15
2	*2437.00	102.67 AV			1.22 V	185	104.82	-2.15
3	4874.00	50.80 PK	74.00	-23.20	1.44 V	154	45.11	5.69
4	4874.00	38.51 AV	54.00	-15.49	1.44 V	154	32.82	5.69
5	7311.00	53.91 PK	74.00	-20.09	1.66 V	294	42.31	11.60
6	7311.00	42.66 AV	54.00	-11.34	1.66 V	294	31.06	11.60
7	#9748.00	56.53 PK	90.99	-34.46	3.82 V	229	42.88	13.65
8	#9748.00	49.29 AV	82.67	-33.38	3.82 V	229	35.64	13.65

**Remarks:**

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " \* ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

<b>RF Mode</b>	TX 802.11n (HT20)	<b>Channel</b>	CH 11 : 2462 MHz
<b>Frequency Range</b>	1GHz ~ 25GHz	<b>Detector Function</b>	Peak (PK) Average (AV)

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2462.00	105.99 PK			3.72 H	240	108.05	-2.06
2	*2462.00	97.58 AV			3.72 H	240	99.64	-2.06
3	2483.50	55.32 PK	74.00	-18.68	3.72 H	240	57.26	-1.94
4	2483.50	44.81 AV	54.00	-9.19	3.72 H	240	46.75	-1.94
5	4924.00	45.04 PK	74.00	-28.96	2.05 H	116	39.27	5.77
6	4924.00	34.63 AV	54.00	-19.37	2.05 H	116	28.86	5.77
7	7386.00	49.51 PK	74.00	-24.49	1.74 H	292	38.10	11.41
8	7386.00	39.05 AV	54.00	-14.95	1.74 H	292	27.64	11.41
9	#9848.00	56.83 PK	85.99	-29.16	2.16 H	40	42.65	14.18
10	#9848.00	48.00 AV	77.58	-29.58	2.16 H	40	33.82	14.18

Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2462.00	109.09 PK			1.35 V	353	111.15	-2.06
2	*2462.00	100.45 AV			1.35 V	353	102.51	-2.06
3	2483.50	61.91 PK	74.00	-12.09	1.35 V	353	63.85	-1.94
4	2483.50	50.76 AV	54.00	-3.24	1.35 V	353	52.70	-1.94
5	4924.00	45.33 PK	74.00	-28.67	1.91 V	249	39.56	5.77
6	4924.00	34.86 AV	54.00	-19.14	1.91 V	249	29.09	5.77
7	7386.00	49.65 PK	74.00	-24.35	1.23 V	175	38.24	11.41
8	7386.00	39.14 AV	54.00	-14.86	1.23 V	175	27.73	11.41
9	#9848.00	57.29 PK	89.09	-31.08	1.14 V	336	43.11	14.18
10	#9848.00	48.23 AV	80.45	-32.22	1.14 V	336	34.05	14.18

**Remarks:**

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " \* ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

<b>RF Mode</b>	TX 802.11n (HT40)	<b>Channel</b>	CH 3 : 2422 MHz
<b>Frequency Range</b>	1GHz ~ 25GHz	<b>Detector Function</b>	Peak (PK) Average (AV)

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2390.00	58.15 PK	74.00	-15.85	3.09 H	251	60.43	-2.28
2	2390.00	48.49 AV	54.00	-5.51	3.09 H	251	50.77	-2.28
3	*2422.00	103.72 PK			3.09 H	251	105.89	-2.17
4	*2422.00	95.33 AV			3.09 H	251	97.50	-2.17
5	4844.00	45.04 PK	74.00	-28.96	1.55 H	121	39.35	5.69
6	4844.00	33.72 AV	54.00	-20.28	1.55 H	121	28.03	5.69
7	7266.00	48.64 PK	74.00	-25.36	1.69 H	234	37.38	11.26
8	7266.00	38.38 AV	54.00	-15.62	1.69 H	234	27.12	11.26
9	#9688.00	55.84 PK	83.72	-27.88	2.32 H	58	42.47	13.37
10	#9688.00	50.65 AV	75.33	-24.68	2.32 H	58	37.28	13.37

Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2390.00	59.77 PK	74.00	-14.23	1.05 V	332	62.05	-2.28
2	2390.00	50.17 AV	54.00	-3.83	1.05 V	332	52.45	-2.28
3	*2422.00	105.28 PK			1.05 V	332	107.45	-2.17
4	*2422.00	97.46 AV			1.05 V	332	99.63	-2.17
5	4844.00	45.36 PK	74.00	-28.64	1.42 V	238	39.67	5.69
6	4844.00	33.89 AV	54.00	-20.11	1.42 V	238	28.20	5.69
7	7266.00	49.15 PK	74.00	-24.85	2.14 V	288	37.89	11.26
8	7266.00	38.53 AV	54.00	-15.47	2.14 V	288	27.27	11.26
9	#9688.00	56.28 PK	85.28	-29.00	1.03 V	335	42.91	13.37
10	#9688.00	49.58 AV	77.46	-27.88	1.03 V	335	36.21	13.37

**Remarks:**

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " \* ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

<b>RF Mode</b>	TX 802.11n (HT40)	<b>Channel</b>	CH 6 : 2437 MHz
<b>Frequency Range</b>	1GHz ~ 25GHz	<b>Detector Function</b>	Peak (PK) Average (AV)

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2437.00	104.60 PK			3.23 H	231	106.75	-2.15
2	*2437.00	95.66 AV			3.23 H	231	97.81	-2.15
3	4874.00	51.64 PK	74.00	-22.36	1.85 H	220	45.95	5.69
4	4874.00	40.69 AV	54.00	-13.31	1.85 H	220	35.00	5.69
5	7311.00	55.20 PK	74.00	-18.80	2.36 H	298	43.60	11.60
6	7311.00	43.94 AV	54.00	-10.06	2.36 H	298	32.34	11.60
7	#9748.00	60.75 PK	84.60	-23.85	3.62 H	61	47.10	13.65
8	#9748.00	51.47 AV	75.66	-24.19	3.62 H	61	37.82	13.65

Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2437.00	106.88 PK			1.52 V	185	109.03	-2.15
2	*2437.00	97.71 AV			1.52 V	185	99.86	-2.15
3	4874.00	50.33 PK	74.00	-23.67	1.58 V	142	44.64	5.69
4	4874.00	39.49 AV	54.00	-14.51	1.58 V	142	33.80	5.69
5	7311.00	53.89 PK	74.00	-20.11	1.75 V	214	42.29	11.60
6	7311.00	43.00 AV	54.00	-11.00	1.75 V	214	31.40	11.60
7	#9748.00	59.22 PK	86.88	-27.66	1.39 V	169	45.57	13.65
8	#9748.00	50.19 AV	77.71	-27.52	1.39 V	169	36.54	13.65

**Remarks:**

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " \* ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

<b>RF Mode</b>	TX 802.11n (HT40)	<b>Channel</b>	CH 9 : 2452 MHz
<b>Frequency Range</b>	1GHz ~ 25GHz	<b>Detector Function</b>	Peak (PK) Average (AV)

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2452.00	104.75 PK			3.02 H	246	106.86	-2.11
2	*2452.00	96.60 AV			3.02 H	246	98.71	-2.11
3	2483.50	55.97 PK	74.00	-18.03	3.02 H	246	57.91	-1.94
4	2483.50	44.57 AV	54.00	-9.43	3.02 H	246	46.51	-1.94
5	4904.00	46.01 PK	74.00	-27.99	1.19 H	157	40.30	5.71
6	4904.00	34.84 AV	54.00	-19.16	1.19 H	157	29.13	5.71
7	7356.00	50.16 PK	74.00	-23.84	2.66 H	89	38.64	11.52
8	7356.00	39.29 AV	54.00	-14.71	2.66 H	89	27.77	11.52
9	#9808.00	55.54 PK	84.75	-29.21	2.12 H	59	41.56	13.98
10	#9808.00	47.99 AV	76.60	-28.67	2.12 H	59	34.01	13.98

Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2452.00	106.37 PK			1.05 V	347	108.48	-2.11
2	*2452.00	98.25 AV			1.05 V	347	100.36	-2.11
3	2483.50	60.72 PK	74.00	-13.28	1.05 V	347	62.66	-1.94
4	2483.50	50.79 AV	54.00	-3.21	1.05 V	347	52.73	-1.94
5	4904.00	46.48 PK	74.00	-27.52	1.73 V	133	40.77	5.71
6	4904.00	35.66 AV	54.00	-18.34	1.73 V	133	29.95	5.71
7	7356.00	51.49 PK	74.00	-22.51	2.30 V	197	39.97	11.52
8	7356.00	40.42 AV	54.00	-13.58	2.30 V	197	28.90	11.52
9	#9808.00	54.90 PK	86.37	-31.47	1.42 V	356	40.92	13.98
10	#9808.00	46.63 AV	78.25	-31.62	1.42 V	356	32.65	13.98

**Remarks:**

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " \* ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

## BELOW 1GHz WORST-CASE DATA

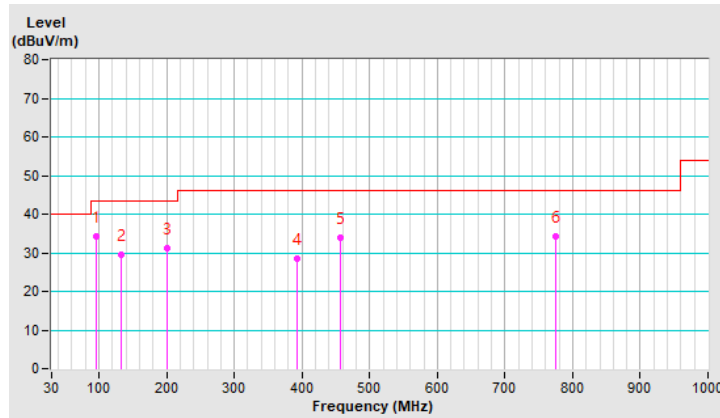
### Mode A

<b>RF Mode</b>	TX 802.11g	<b>Channel</b>	CH 11 : 2462 MHz
<b>Frequency Range</b>	9kHz ~ 1GHz	<b>Detector Function</b>	Quasi-Peak (QP)

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	95.96	34.18 QP	43.50	-9.32	3.22 H	32	46.00	-11.82
2	131.85	29.62 QP	43.50	-13.88	2.62 H	92	37.44	-7.82
3	199.75	31.23 QP	43.50	-12.27	2.92 H	62	40.19	-8.96
4	391.81	28.63 QP	46.00	-17.37	1.62 H	191	30.86	-2.23
5	457.77	33.84 QP	46.00	-12.16	2.30 H	123	34.34	-0.50
6	774.96	34.25 QP	46.00	-11.75	2.05 H	148	28.54	5.71

### Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit of frequency range 30MHz~1000MHz.
5. The emission levels were very low against the limit of frequency range 9kHz~30MHz: the amplitude of spurious emissions attenuated more than 20 dB below the permissible value to be report.



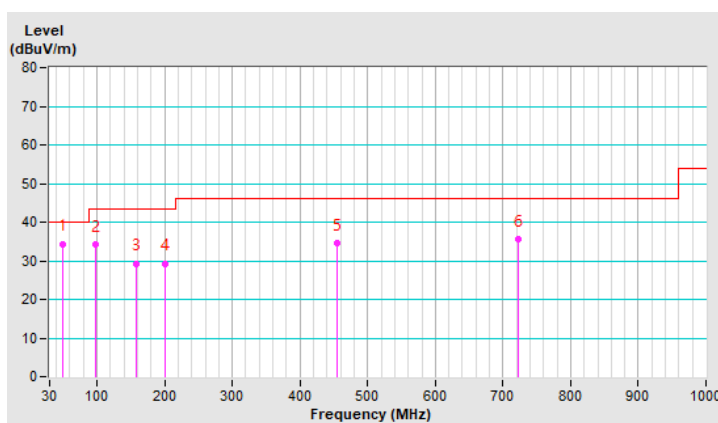


<b>RF Mode</b>	TX 802.11g	<b>Channel</b>	CH 11 : 2462 MHz
<b>Frequency Range</b>	9kHz ~ 1GHz	<b>Detector Function</b>	Quasi-Peak (QP)

Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	49.40	34.38 QP	40.00	-5.62	1.44 V	302	41.35	-6.97
2	96.93	34.13 QP	43.50	-9.37	1.77 V	269	45.82	-11.69
3	157.07	29.16 QP	43.50	-14.34	2.02 V	244	35.45	-6.29
4	199.75	29.07 QP	43.50	-14.43	2.32 V	215	38.03	-8.96
5	454.86	34.44 QP	46.00	-11.56	2.77 V	170	35.00	-0.56
6	722.58	35.49 QP	46.00	-10.51	3.10 V	137	31.08	4.41

**Remarks:**

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit of frequency range 30MHz~1000MHz.
5. The emission levels were very low against the limit of frequency range 9kHz~30MHz: the amplitude of spurious emissions attenuated more than 20 dB below the permissible value to be report.



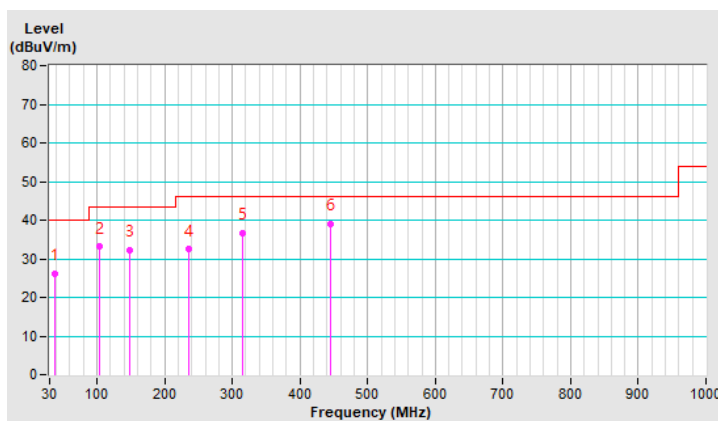
**Mode B**

<b>RF Mode</b>	TX 802.11g	<b>Channel</b>	CH 11 : 2462 MHz
<b>Frequency Range</b>	9kHz ~ 1GHz	<b>Detector Function</b>	Quasi-Peak (QP)

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	37.76	26.10 QP	40.00	-13.90	1.06 H	32	34.00	-7.90
2	104.64	33.10 QP	43.50	-10.40	2.36 H	312	43.41	-10.31
3	148.53	32.37 QP	43.50	-11.13	1.42 H	5	38.80	-6.43
4	235.49	32.39 QP	46.00	-13.61	1.22 H	238	39.74	-7.35
5	315.62	36.61 QP	46.00	-9.39	1.45 H	56	40.22	-3.61
6	445.50	38.95 QP	46.00	-7.05	1.62 H	160	39.86	-0.91

**Remarks:**

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit of frequency range 30MHz~1000MHz.
5. The emission levels were very low against the limit of frequency range 9kHz~30MHz: the amplitude of spurious emissions attenuated more than 20 dB below the permissible value to be report.

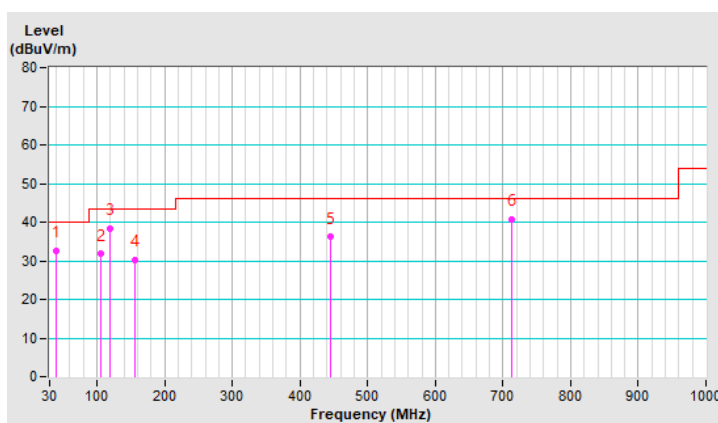


<b>RF Mode</b>	TX 802.11g	<b>Channel</b>	CH 11 : 2462 MHz
<b>Frequency Range</b>	9kHz ~ 1GHz	<b>Detector Function</b>	Quasi-Peak (QP)

Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	39.26	32.65 QP	40.00	-7.35	1.33 V	54	40.40	-7.75
2	105.22	31.72 QP	43.50	-11.78	2.54 V	256	41.99	-10.27
3	119.82	38.41 QP	43.50	-5.09	1.29 V	162	47.29	-8.88
4	156.73	30.33 QP	43.50	-13.17	1.51 V	170	36.51	-6.18
5	445.50	36.16 QP	46.00	-9.84	1.07 V	199	37.07	-0.91
6	713.66	40.84 QP	46.00	-5.16	1.23 V	341	36.64	4.20

**Remarks:**

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit of frequency range 30MHz~1000MHz.
5. The emission levels were very low against the limit of frequency range 9kHz~30MHz: the amplitude of spurious emissions attenuated more than 20 dB below the permissible value to be report.



## 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 0.50MHz.

### 4.2.2 Test Instruments

Description & Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Due
ROHDE & SCHWARZ TEST RECEIVER	ESR3	102412	Jan. 29, 2021	Jan. 28, 2022
ROHDE & SCHWARZ Artificial Mains Network (for EUT)	ENV216	101197	Jun. 10, 2020	Jun. 9, 2021
LISN With Adapter (for EUT)	101197	NA	Jun. 10, 2020	Jun. 9, 2021
ROHDE & SCHWARZ Artificial Mains Network (for peripherals)	ESH3-Z5	100218	Dec. 2, 2020	Dec. 1, 2021
SCHWARZBECK Artificial Mains Network (For EUT)	NNLK8129	8129229	May 20, 2021	May 19, 2022
SCHWARZBECK Artificial Mains Network (For EUT)	NNLK 8121	8121-808	Apr. 18, 2021	Apr. 17, 2022
Software	Cond_V7.3.7.4	NA	NA	NA
RF cable (JYEBAO) With 10dB PAD	5D-FB	Cable-C10.01	Feb. 10, 2021	Feb. 9, 2022
LYNICS Terminator (For ROHDE & SCHWARZ LISN)	0900510	E1-011484	May 25, 2021	May 24, 2022

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 Shielded Room No. 10. (Conduction 10)

3. The VCCI Site Registration No. C-11852.

4. Tested Date: May 26 to 27, 2021

#### 4.2.3 Test Procedures

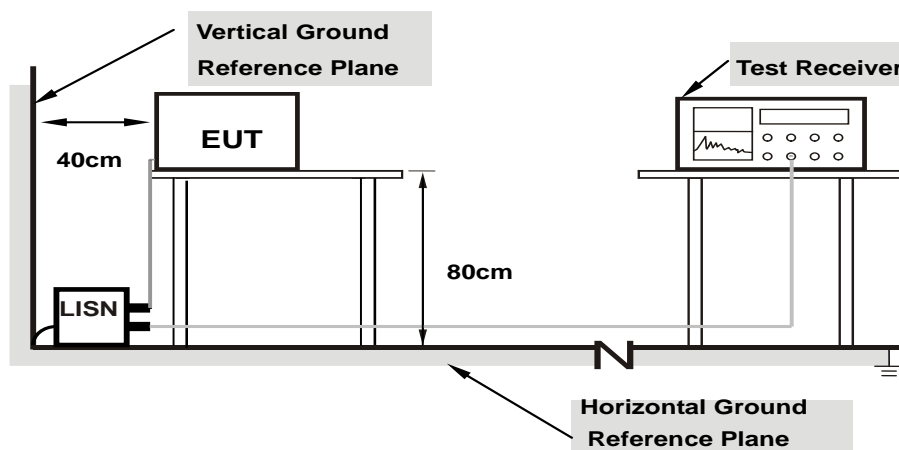
- The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling impedance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

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

#### 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

- Connected the EUT to Adapter or Notebook.
- Set the EUT under transmission condition continuously at specific channel frequency continuously.

#### 4.2.7 Test Results

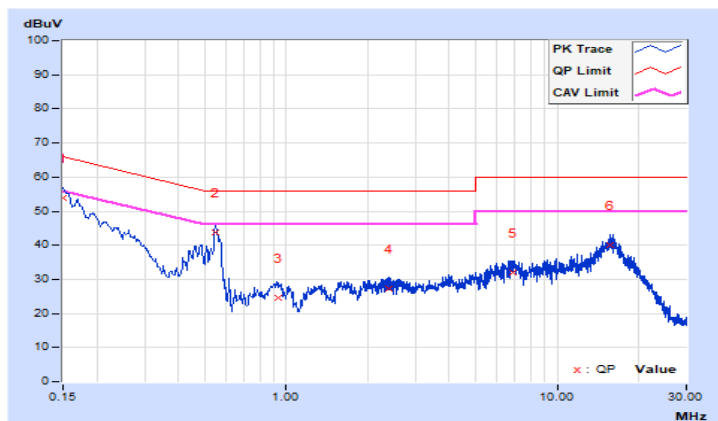
##### Mode A

RF Mode	TX 802.11g	Channel	CH 11 : 2462 MHz
Frequency Range	150kHz ~ 30MHz	Detector Function & Resolution Bandwidth	Quasi-Peak (QP) / Average (AV), 9kHz

Phase Of Power : Line (L)										
No	Frequency (MHz)	Correction Factor (dB)	Reading Value (dBuV)		Emission Level (dBuV)		Limit (dBuV)		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15000	9.83	43.97	32.47	53.80	42.30	66.00	56.00	-12.20	-13.70
<b>2</b>	<b>0.54662</b>	<b>9.88</b>	<b>34.03</b>	<b>30.74</b>	<b>43.91</b>	<b>40.62</b>	<b>56.00</b>	<b>46.00</b>	<b>-12.09</b>	<b>-5.38</b>
3	0.93412	9.94	14.61	8.71	24.55	18.65	56.00	46.00	-31.45	-27.35
4	2.40075	10.08	17.11	11.90	27.19	21.98	56.00	46.00	-28.81	-24.02
5	6.87337	10.24	21.80	15.34	32.04	25.58	60.00	50.00	-27.96	-24.42
6	15.59490	10.41	29.65	20.78	40.06	31.19	60.00	50.00	-19.94	-18.81

##### Remarks:

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

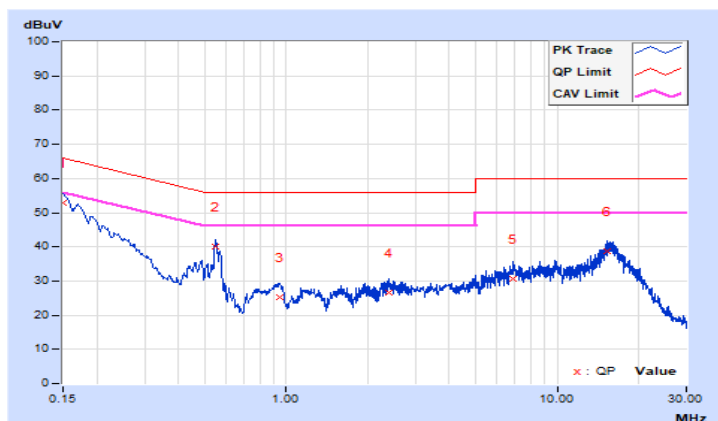


RF Mode	TX 802.11g	Channel	CH 11 : 2462 MHz
Frequency Range	150kHz ~ 30MHz	Detector Function & Resolution Bandwidth	Quasi-Peak (QP) / Average (AV), 9kHz

Phase Of Power : Neutral (N)										
No	Frequency (MHz)	Correction Factor (dB)	Reading Value (dBuV)		Emission Level (dBuV)		Limit (dBuV)		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15000	9.83	43.02	31.04	52.85	40.87	66.00	56.00	-13.15	-15.13
2	0.55084	9.87	30.22	27.47	40.09	37.34	56.00	46.00	-15.91	-8.66
3	0.94559	9.94	15.28	10.26	25.22	20.20	56.00	46.00	-30.78	-25.80
4	2.40075	10.09	16.39	10.98	26.48	21.07	56.00	46.00	-29.52	-24.93
5	6.84208	10.25	20.30	11.79	30.55	22.04	60.00	50.00	-29.45	-27.96
6	15.23509	10.44	28.32	20.14	38.76	30.58	60.00	50.00	-21.24	-19.42

**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



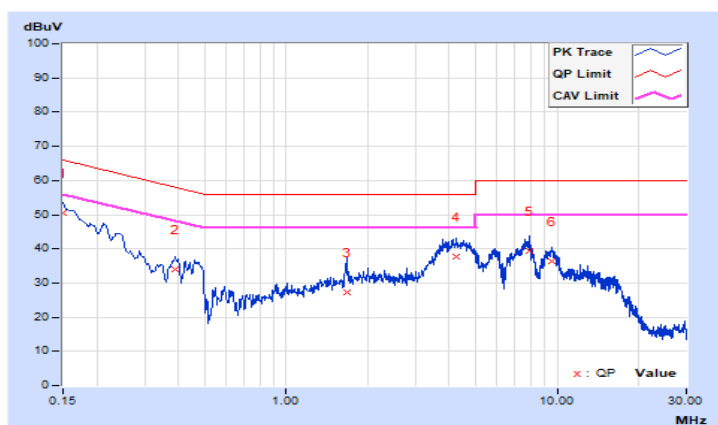
**Mode B**

RF Mode	TX 802.11g	Channel	CH 11 : 2462 MHz
Frequency Range	150kHz ~ 30MHz	Detector Function & Resolution Bandwidth	Quasi-Peak (QP) / Average (AV), 9kHz

Phase Of Power : Line (L)										
No	Frequency (MHz)	Correction Factor (dB)	Reading Value (dBuV)		Emission Level (dBuV)		Limit (dBuV)		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15000	9.83	40.79	24.88	50.62	34.71	66.00	56.00	-15.38	-21.29
2	0.38857	9.86	24.09	17.75	33.95	27.61	58.09	48.09	-24.14	-20.48
3	1.66939	10.02	17.15	10.90	27.17	20.92	56.00	46.00	-28.83	-25.08
4	4.25456	10.17	27.65	19.48	37.82	29.65	56.00	46.00	-18.18	-16.35
5	7.89805	10.26	29.24	22.90	39.50	33.16	60.00	50.00	-20.50	-16.84
6	9.51721	10.31	25.91	20.39	36.22	30.70	60.00	50.00	-23.78	-19.30

**Remarks:**

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



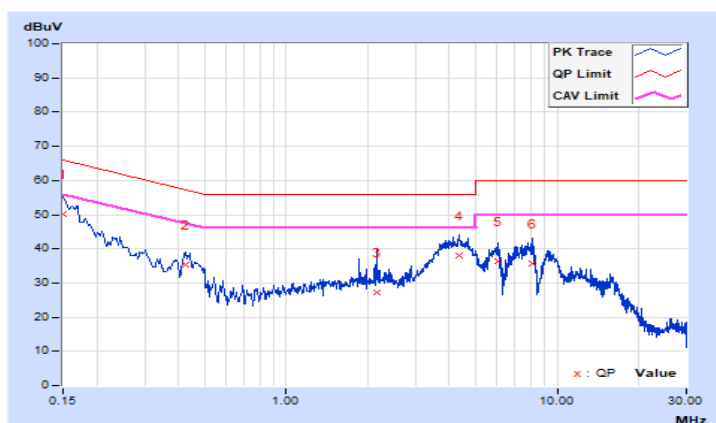


RF Mode	TX 802.11g	Channel	CH 11 : 2462 MHz
Frequency Range	150kHz ~ 30MHz	Detector Function & Resolution Bandwidth	Quasi-Peak (QP) / Average (AV), 9kHz

Phase Of Power : Neutral (N)										
No	Frequency (MHz)	Correction Factor (dB)	Reading Value (dBuV)		Emission Level (dBuV)		Limit (dBuV)		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15000	9.83	40.34	25.05	50.17	34.88	66.00	56.00	-15.83	-21.12
2	0.42334	9.84	25.57	16.75	35.41	26.59	57.38	47.38	-21.97	-20.79
3	2.15044	10.08	17.34	10.62	27.42	20.70	56.00	46.00	-28.58	-25.30
4	4.36016	10.18	27.71	20.56	37.89	30.74	56.00	46.00	-18.11	-15.26
5	6.05597	10.22	26.12	19.82	36.34	30.04	60.00	50.00	-23.66	-19.96
6	8.06231	10.28	25.49	18.86	35.77	29.14	60.00	50.00	-24.23	-20.86

**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

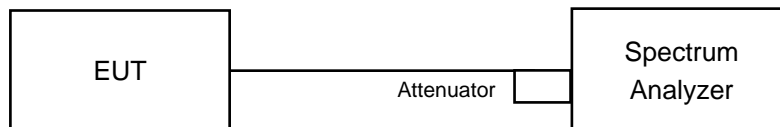


### 4.3 6dB Bandwidth Measurement

#### 4.3.1 Limits of 6dB Bandwidth Measurement

The minimum of 6dB 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) = 100kHz
- b. Set the video bandwidth (VBW)  $\geq 3 \times$  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 Result

#### Mode B

#### 802.11b

Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
1	2412	8.58	9.06	0.5	Pass
6	2437	8.09	8.11	0.5	Pass
11	2462	9.10	9.54	0.5	Pass

#### 802.11g

Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
1	2412	16.35	16.35	0.5	Pass
6	2437	15.20	15.19	0.5	Pass
11	2462	15.90	15.94	0.5	Pass

#### 802.11n (HT20)

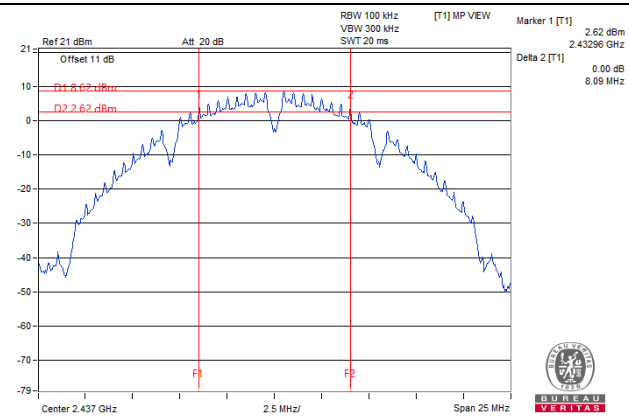
Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
1	2412	17.20	17.22	0.5	Pass
6	2437	15.17	15.18	0.5	Pass
11	2462	16.83	16.91	0.5	Pass

#### 802.11n (HT40)

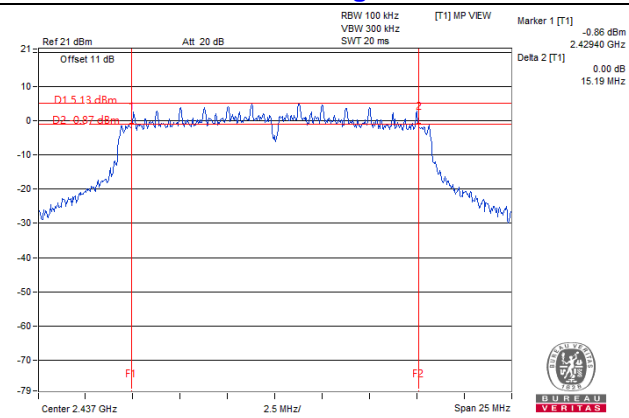
Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
3	2422	35.26	35.25	0.5	Pass
6	2437	35.21	35.20	0.5	Pass
9	2452	35.89	36.05	0.5	Pass

### Spectrum Plot of Worst Value

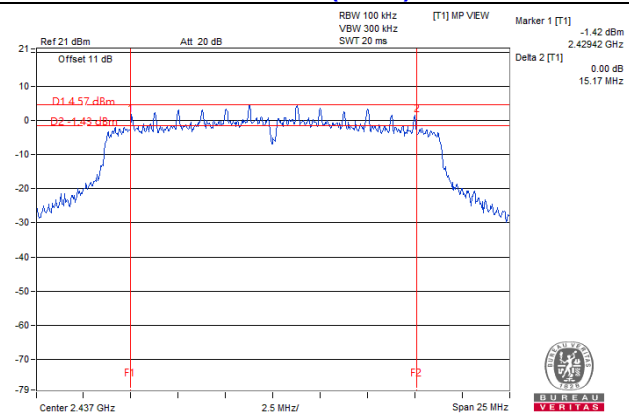
#### 802.11b



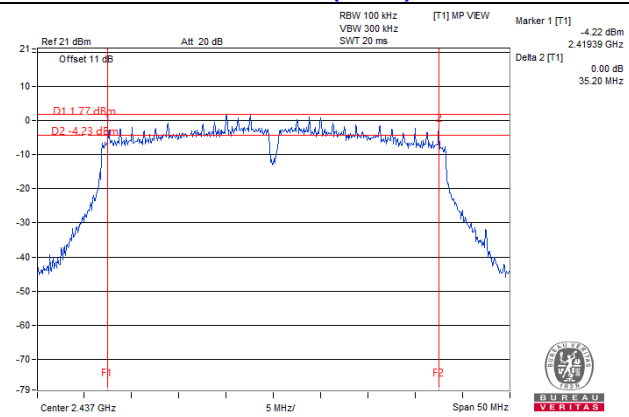
#### 802.11g



#### 802.11n (HT20)



#### 802.11n (HT40)



## 4.4 Conducted Output Power Measurement

### 4.4.1 Limits of Conducted Output Power Measurement

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

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

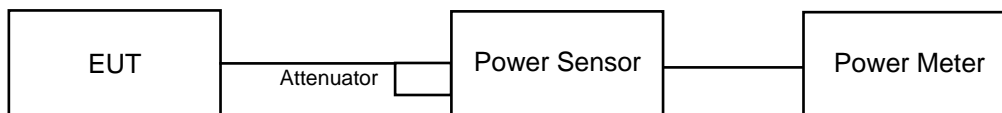
Array Gain = 0 dB (i.e., no array gain) for  $N_{ANT} \leq 4$ ;

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

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

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

### 4.4.2 Test Setup



### 4.4.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

### 4.4.4 Test Procedures

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

Average power 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.

### 4.4.5 Deviation from Test Standard

No deviation.

### 4.4.6 EUT Operating Conditions

Same as Item 4.3.6.

4.4.7 Test Results

**Mode B**

**FOR PEAK POWER**

**802.11b**

Channel	Frequency (MHz)	Peak Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
1	2412	20.16	20.51	216.213	23.35	30	Pass
6	2437	20.28	20.36	215.302	23.33	30	Pass
11	2462	20.23	20.24	211.120	23.25	30	Pass

**802.11g**

Channel	Frequency (MHz)	Peak Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
1	2412	20.49	20.95	236.395	23.74	30	Pass
6	2437	20.57	20.76	233.149	23.68	30	Pass
11	2462	20.18	20.18	208.463	23.19	30	Pass

**802.11n (HT20)**

Channel	Frequency (MHz)	Peak Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
1	2412	17.23	17.49	108.949	20.37	30	Pass
6	2437	19.67	19.88	189.958	22.79	30	Pass
11	2462	19.18	19.46	171.102	22.33	30	Pass

**802.11n (HT40)**

Channel	Frequency (MHz)	Peak Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
3	2422	17.35	18.08	118.594	20.74	30	Pass
6	2437	20.73	21.04	<b>245.362</b>	23.90	30	Pass
9	2452	18.56	19.00	151.212	21.80	30	Pass

**FOR AVERAGE POWER**

**802.11b**

Chan.	Frequency (MHz)	Avg. Power (dBm)		Total Avg.Power (mW)	Total Avg.Power (dBm)
		Chain 0	Chain 1		
1	2412	17.75	18.17	125.181	20.98
6	2437	17.89	18.04	125.197	20.98
11	2462	17.97	17.92	124.605	20.96

**802.11g**

Chan.	Frequency (MHz)	Avg. Power (dBm)		Total Avg.Power (mW)	Total Avg.Power (dBm)
		Chain 0	Chain 1		
1	2412	15.90	16.24	80.977	19.08
6	2437	16.01	16.04	80.082	19.04
11	2462	15.13	15.41	67.337	18.28

**802.11n (HT20)**

Chan.	Frequency (MHz)	Avg. Power (dBm)		Total Avg.Power (mW)	Total Avg.Power (dBm)
		Chain 0	Chain 1		
1	2412	13.08	13.31	41.752	16.21
6	2437	14.85	14.92	61.595	17.90
11	2462	14.34	14.56	55.740	17.46

**802.11n (HT40)**

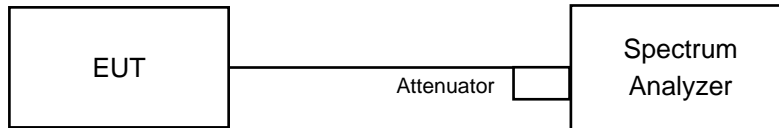
Chan.	Frequency (MHz)	Avg. Power (dBm)		Total Avg.Power (mW)	Total Avg.Power (dBm)
		Chain 0	Chain 1		
3	2422	11.38	11.62	28.262	14.51
6	2437	14.89	15.01	62.528	17.96
9	2452	12.78	13.14	39.573	15.97

## 4.5 Power Spectral Density Measurement

### 4.5.1 Limits of Power Spectral Density Measurement

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

### 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 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:  $3 \text{ kHz} \leq \text{RBW} \leq 100 \text{ kHz}$ .
- d. Set the VBW  $\geq 3 \times \text{RBW}$ .
- 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.

### 4.5.5 Deviation from Test Standard

No deviation.

### 4.5.6 EUT Operating Condition

Same as Item 4.3.6



#### 4.5.7 Test Results

##### Mode B

##### 802.11b

TX chain	Channel	Freq. (MHz)	PSD (dBm)	10 log (N=2) dB	Total PSD (dBm)	Limit (dBm)	Pass /Fail
0	1	2412	-5.05	3.01	-2.04	8	Pass
	6	2437	-5.70	3.01	-2.69	8	Pass
	11	2462	-5.32	3.01	-2.31	8	Pass
1	1	2412	-4.42	3.01	-1.41	8	Pass
	6	2437	-5.48	3.01	-2.47	8	Pass
	11	2462	-6.16	3.01	-3.15	8	Pass

Note:

1. Method E) 2) c) of power density measurement of KDB 662911 is using for calculating total power density.
2. Directional gain =  $10 \log[(10^{G1/20} + 10^{G2/20})^2/2] = 4.59\text{dBi} < 6\text{dBi}$  , so the power density limit is not reduced.

##### 802.11g

TX chain	Channel	Freq. (MHz)	PSD (dBm)	10 log (N=2) dB	Total PSD (dBm)	Limit (dBm)	Pass /Fail
0	1	2412	-10.22	3.01	-7.21	8	Pass
	6	2437	-10.35	3.01	-7.34	8	Pass
	11	2462	-10.45	3.01	-7.44	8	Pass
1	1	2412	-10.97	3.01	-7.96	8	Pass
	6	2437	-10.25	3.01	-7.24	8	Pass
	11	2462	-10.44	3.01	-7.43	8	Pass

Note:

1. Method E) 2) c) of power density measurement of KDB 662911 is using for calculating total power density.
2. Directional gain =  $10 \log[(10^{G1/20} + 10^{G2/20})^2/2] = 4.59\text{dBi} < 6\text{dBi}$  , so the power density limit is not reduced.

##### 802.11n (HT20)

TX chain	Channel	Freq. (MHz)	PSD (dBm)	10 log (N=2) dB	Total PSD (dBm)	Limit (dBm)	Pass /Fail
0	1	2412	-11.68	3.01	-8.67	8	Pass
	6	2437	-11.66	3.01	-8.65	8	Pass
	11	2462	-12.27	3.01	-9.26	8	Pass
1	1	2412	-11.91	3.01	-8.9	8	Pass
	6	2437	-11.24	3.01	-8.23	8	Pass
	11	2462	-11.99	3.01	-8.98	8	Pass

Note:

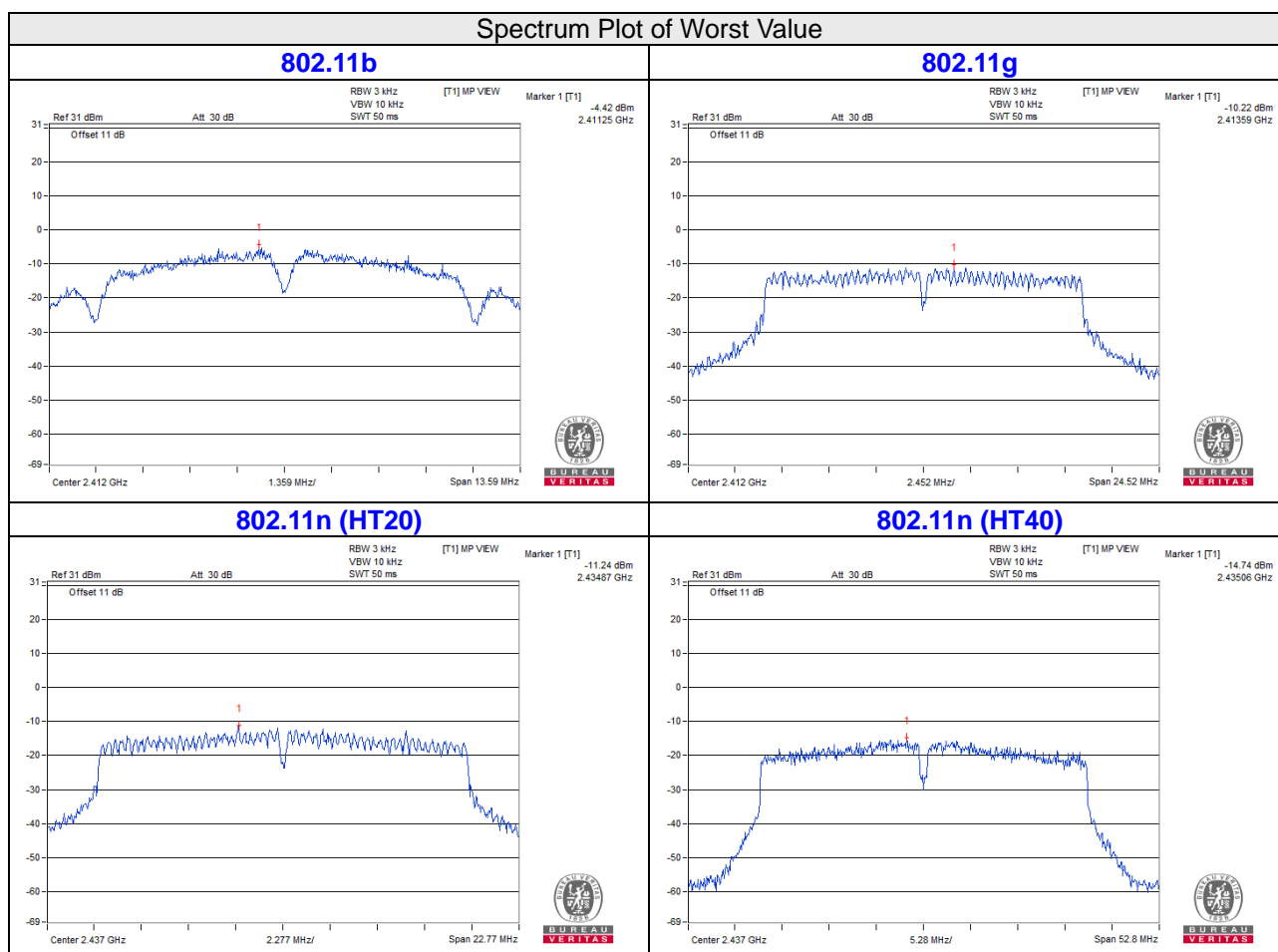
1. Method E) 2) c) of power density measurement of KDB 662911 is using for calculating total power density.
2. Directional gain =  $10 \log[(10^{G1/20} + 10^{G2/20})^2/2] = 4.59\text{dBi} < 6\text{dBi}$  , so the power density limit is not reduced.

### 802.11n (HT40)

TX chain	Channel	Freq. (MHz)	PSD (dBm)	10 log (N=2) dB	Total PSD (dBm)	Limit (dBm)	Pass /Fail
0	3	2422	-16.30	3.01	-13.29	8	Pass
	6	2437	-14.92	3.01	-11.91	8	Pass
	9	2452	-16.30	3.01	-13.29	8	Pass
1	3	2422	-17.32	3.01	-14.31	8	Pass
	6	2437	-14.74	3.01	-11.73	8	Pass
	9	2452	-16.34	3.01	-13.33	8	Pass

Note:

- Method E) 2) c) of power density measurement of KDB 662911 is using for calculating total power density.
- Directional gain =  $10 \log[(10^{G1/20} + 10^{G2/20})^2/2] = 4.59\text{dBi} < 6\text{dBi}$ , so the power density limit is not reduced.

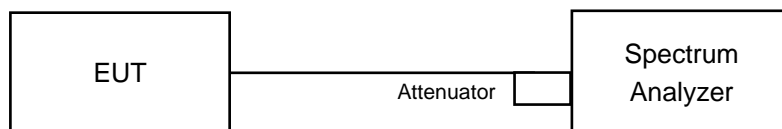


## 4.6 Conducted Out of Band Emission Measurement

### 4.6.1 Limits of Conducted Out of Band Emission Measurement

Below -20dB of the highest emission level of operating band (in 100kHz Resolution Bandwidth).

### 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

#### MEASUREMENT PROCEDURE REF

1. Set the RBW = 100 kHz.
2. Set the VBW  $\geq$  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 OOB

1. Set RBW = 100 kHz.
2. Set VBW  $\geq$  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.

### 4.6.5 Deviation from Test Standard

No deviation.

### 4.6.6 EUT Operating Condition

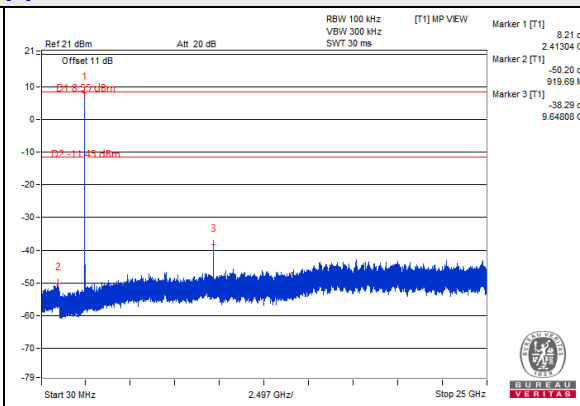
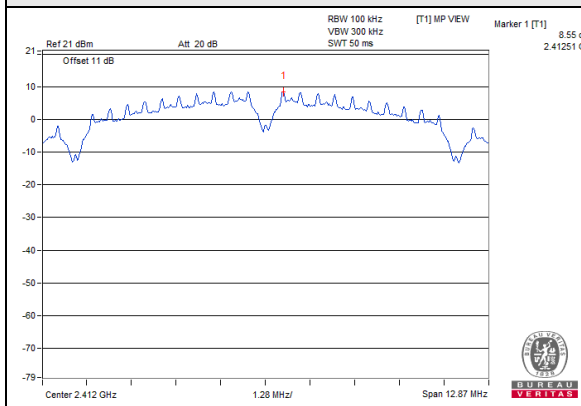
Same as Item 4.3.6

### 4.6.7 Test Results

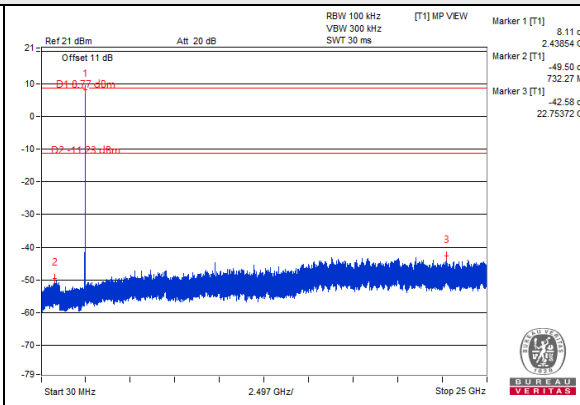
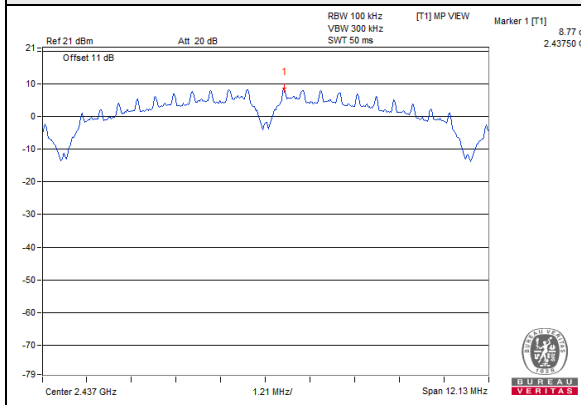
The spectrum plots are attached on the following pages. D1 line indicates the highest level, and D2 line indicates the 20dB offset below D1. It shows compliance with the requirement.

Mode B  
802.11b: Chain 0

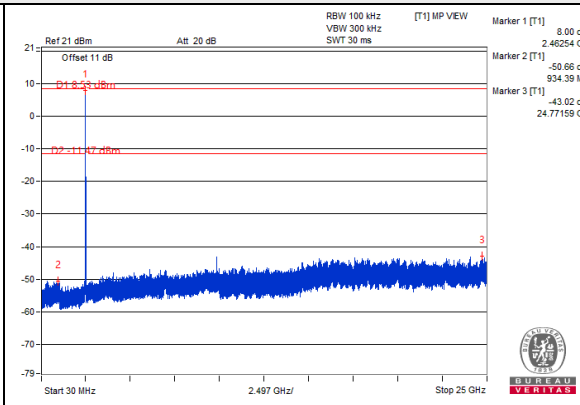
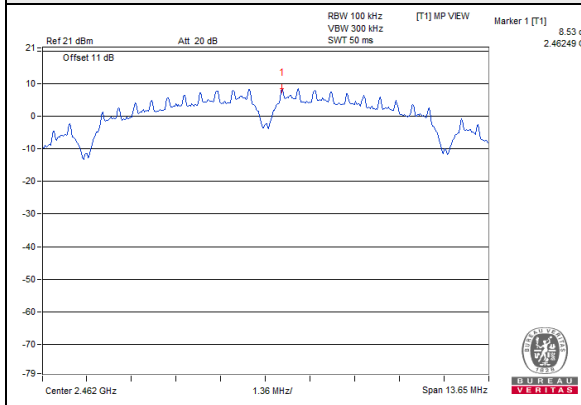
CH 1



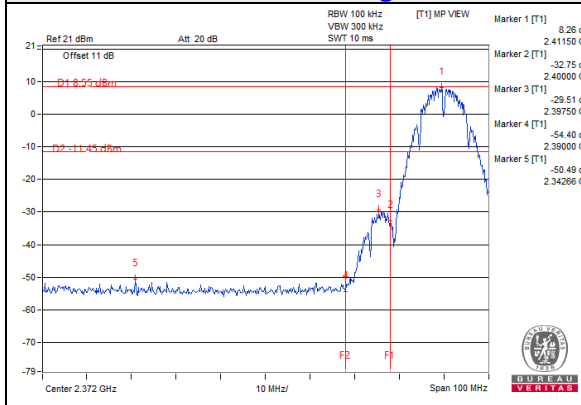
CH 6



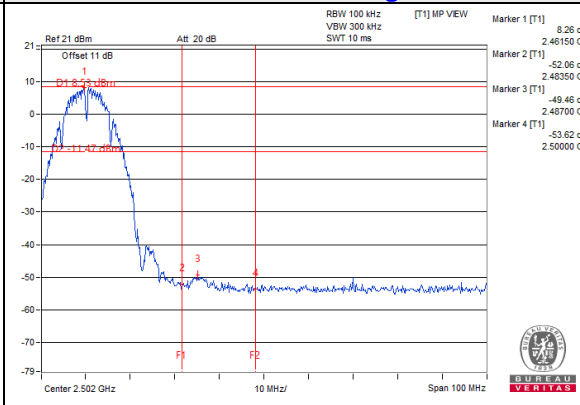
CH 11



CH 1 Band edge

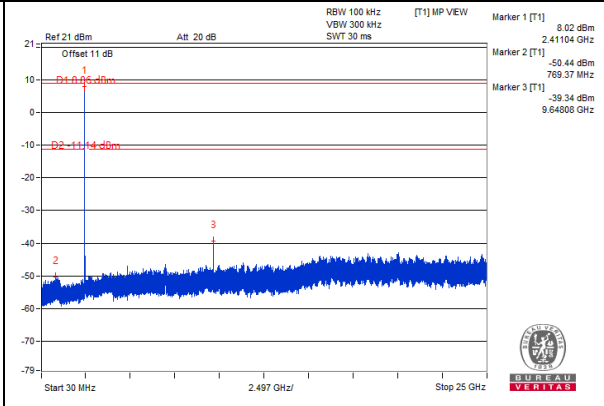
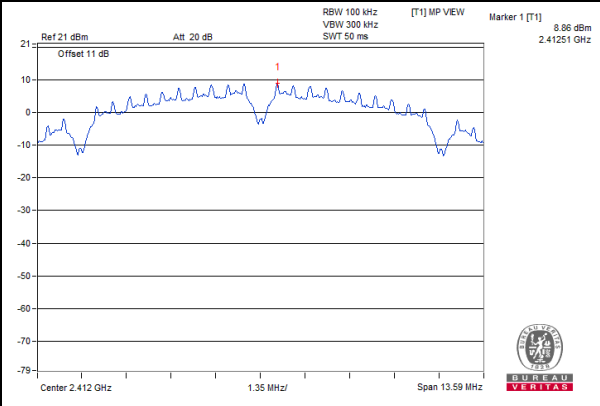


CH 11 Band edge

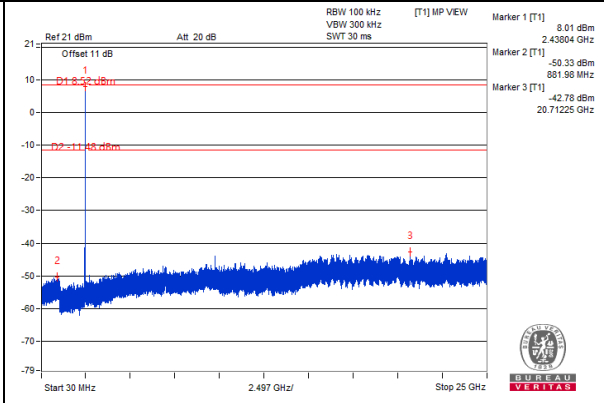
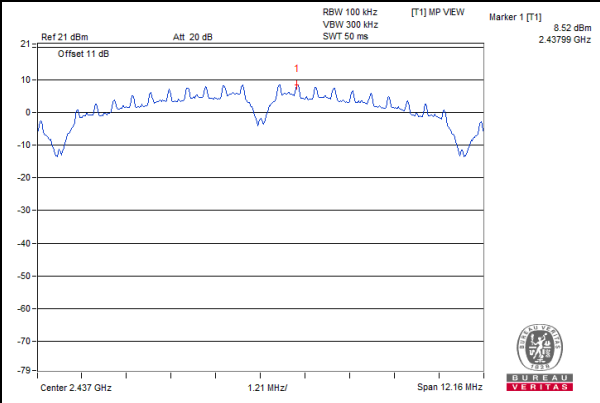


802.11b: Chain 1

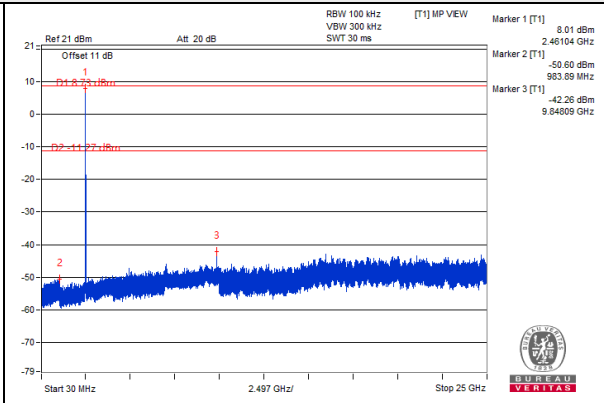
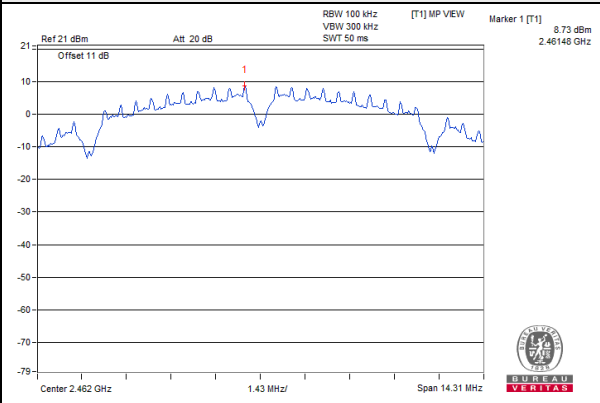
CH 1



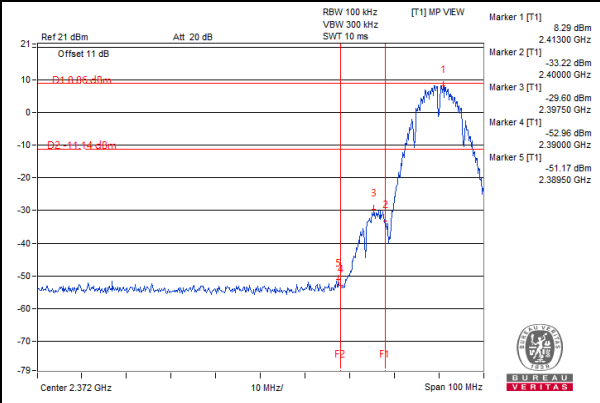
CH 6



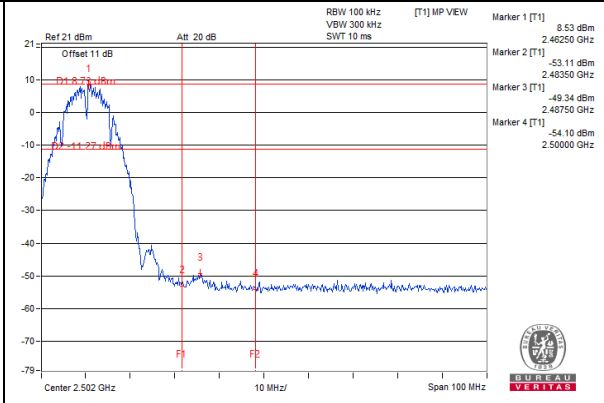
CH 11



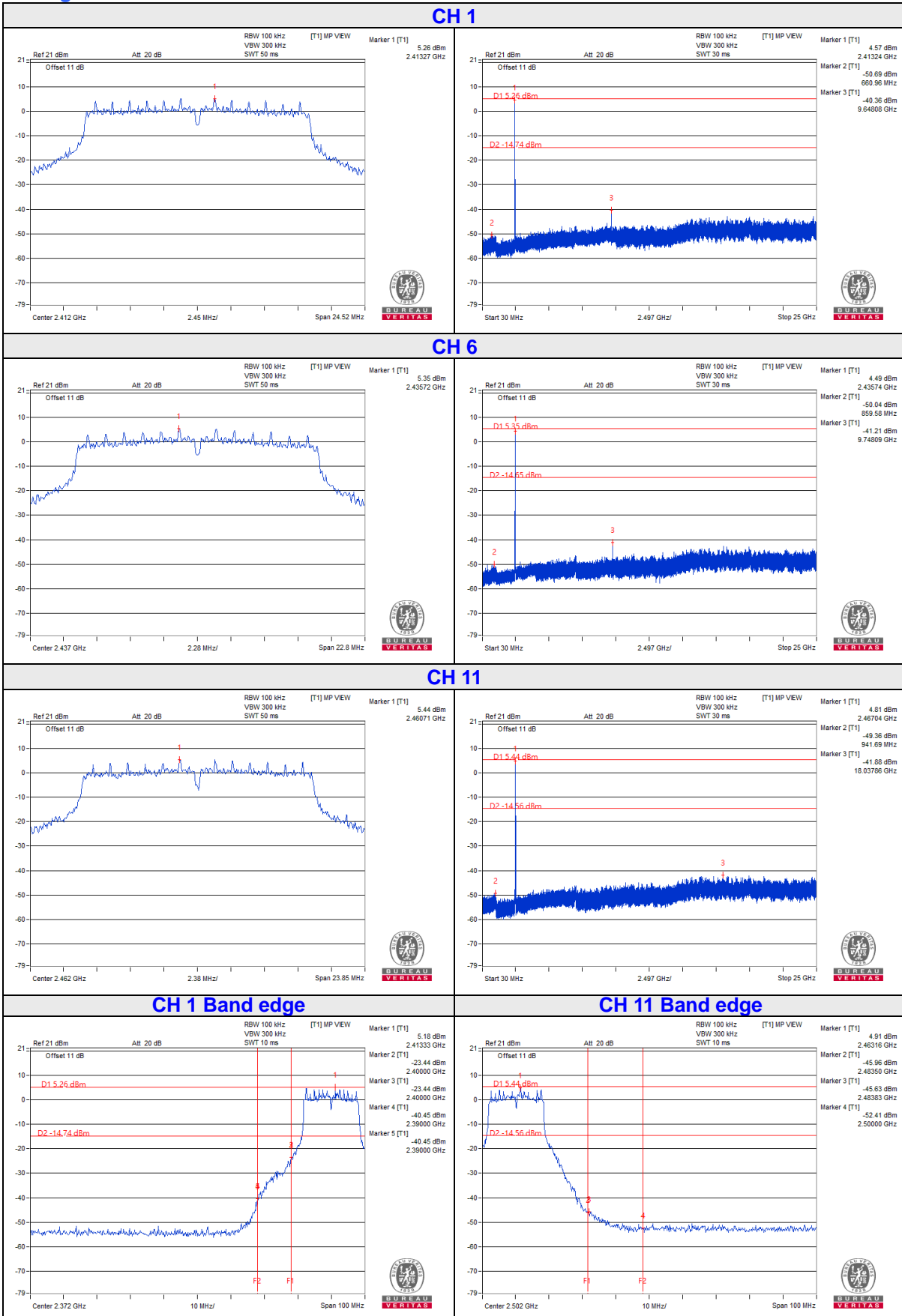
CH 1 Band edge



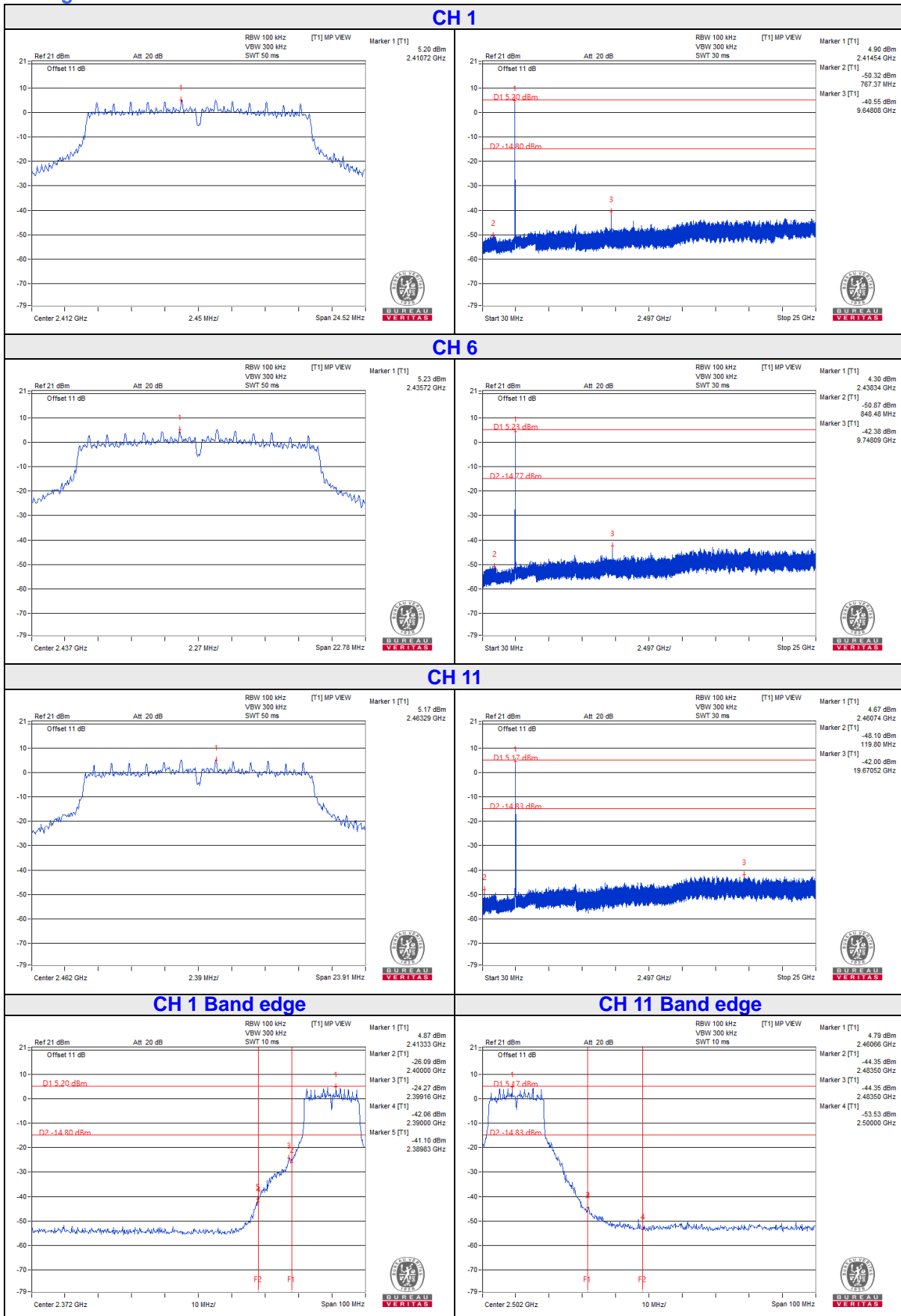
CH 11 Band edge



# 802.11g: Chain 0



# 802.11g: Chain 1

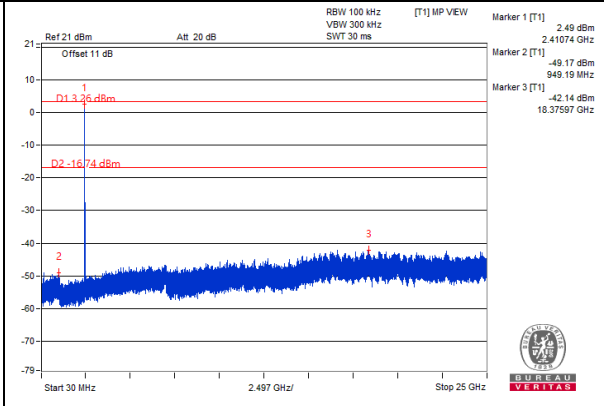
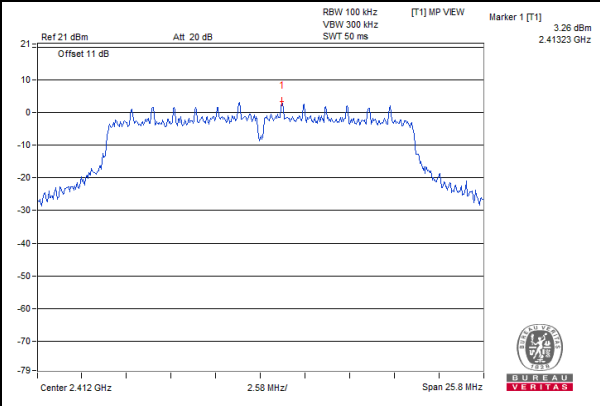




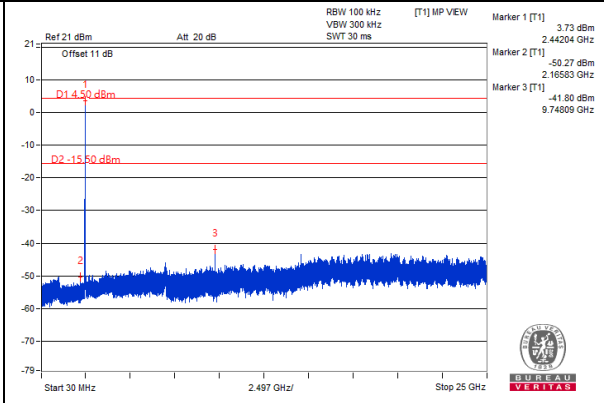
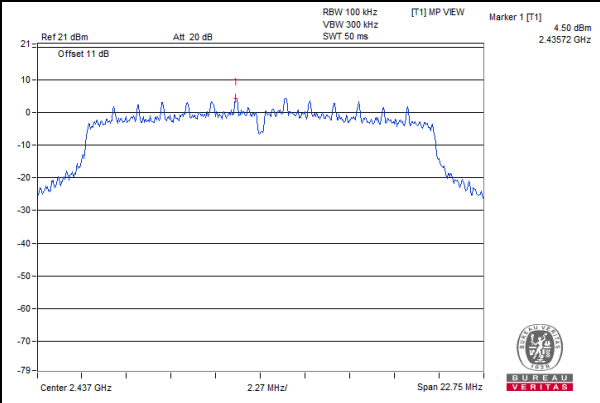
BUREAU VERITAS

### 802.11n (HT20): Chain 0

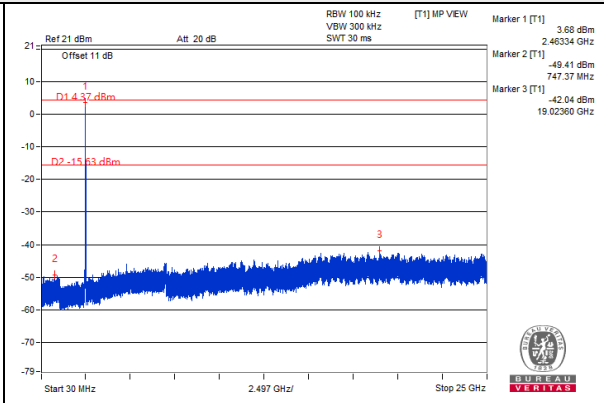
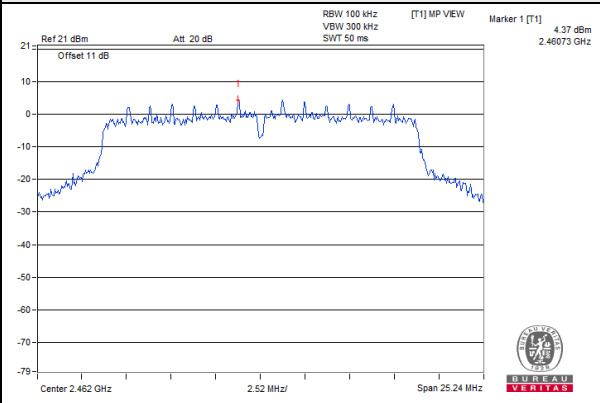
#### CH 1



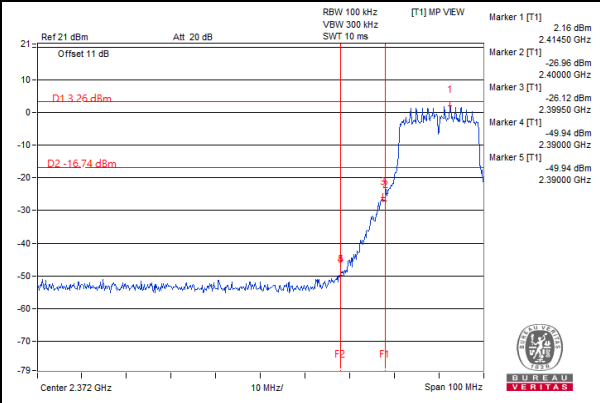
#### CH 6



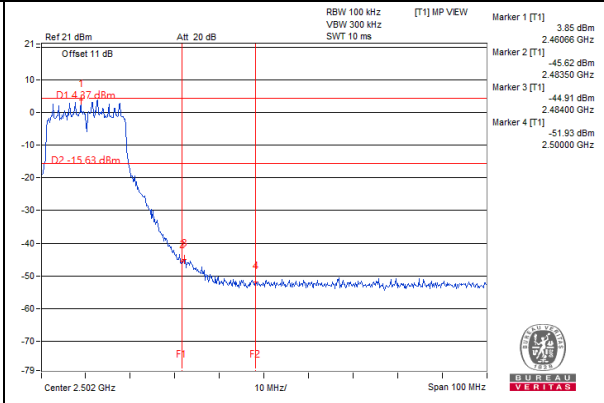
#### CH 11



#### CH 1 Band edge



#### CH 11 Band edge



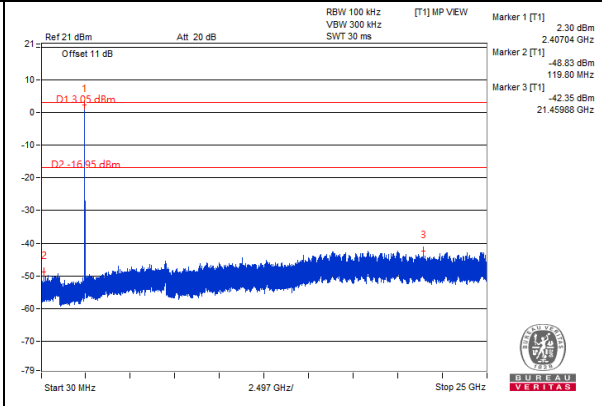
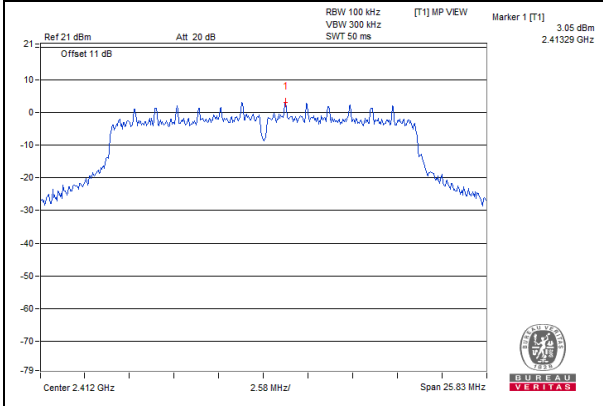




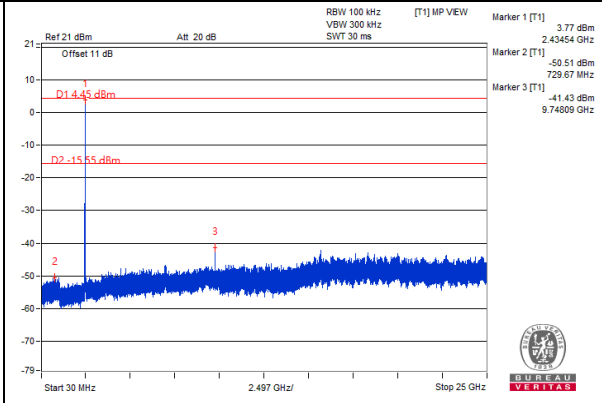
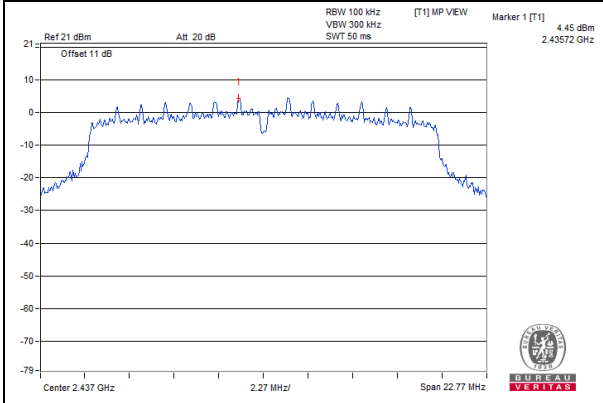
BUREAU VERITAS

### 802.11n (HT20): Chain 1

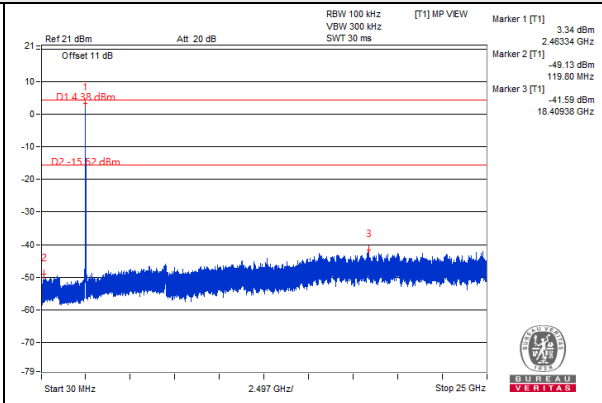
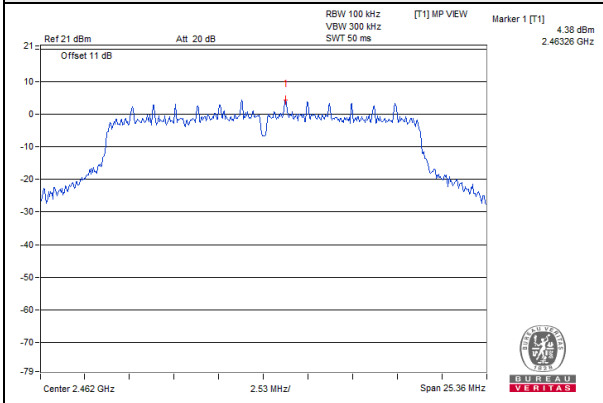
#### CH 1



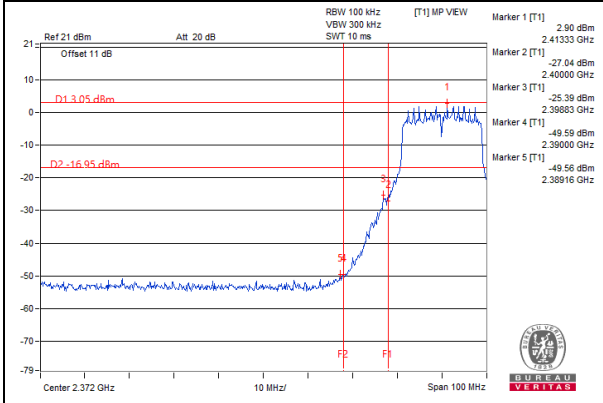
#### CH 6



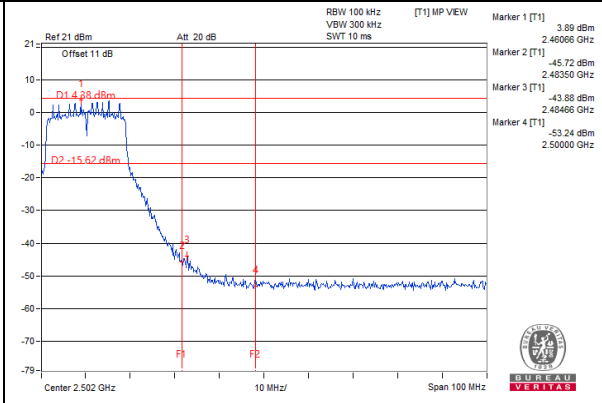
#### CH 11



#### CH 1 Band edge

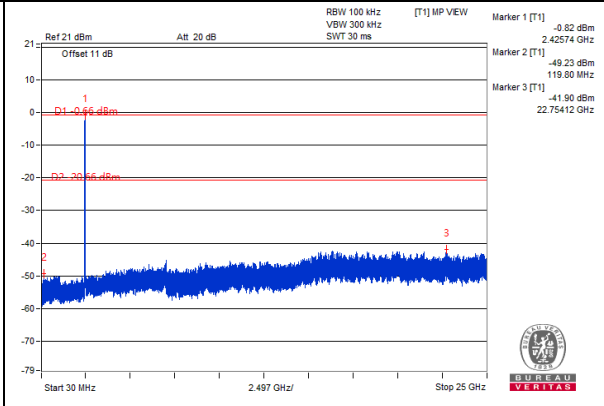
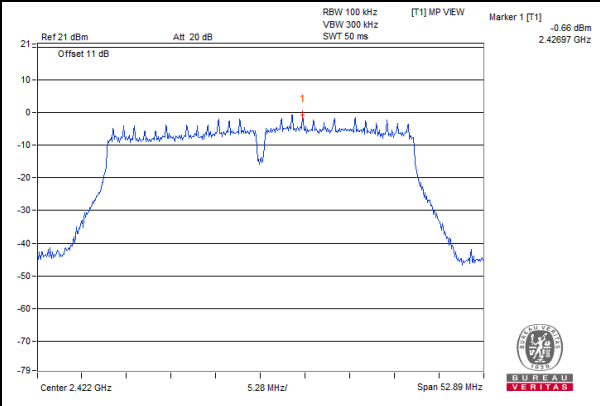


#### CH 11 Band edge

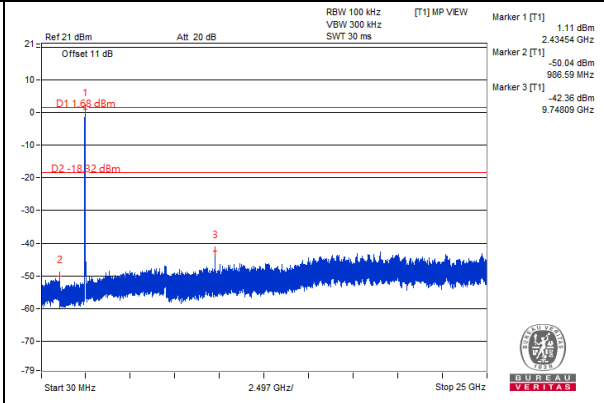
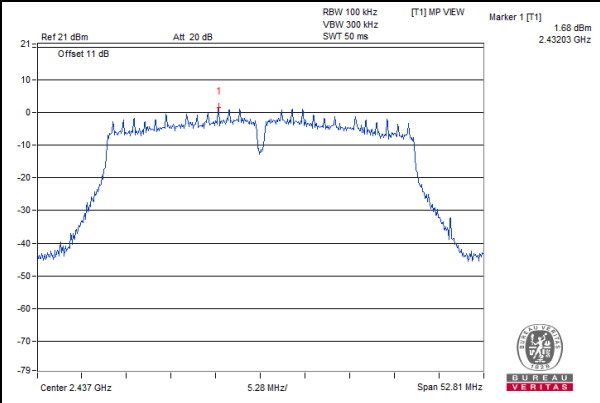


802.11n (HT40): Chain 0

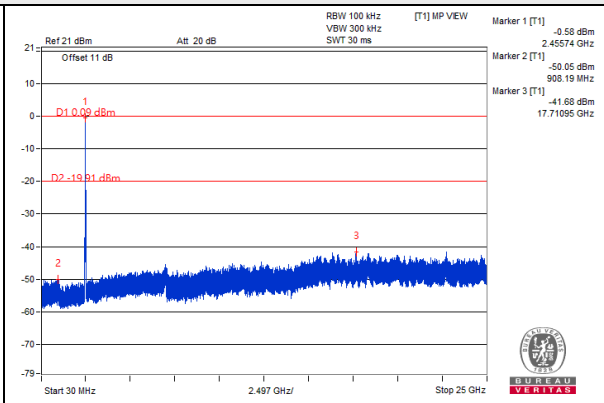
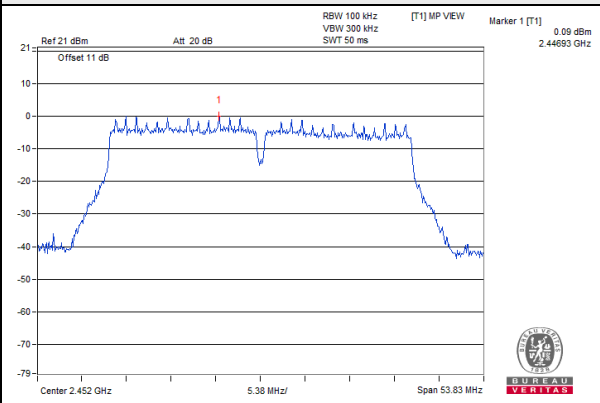
CH 3



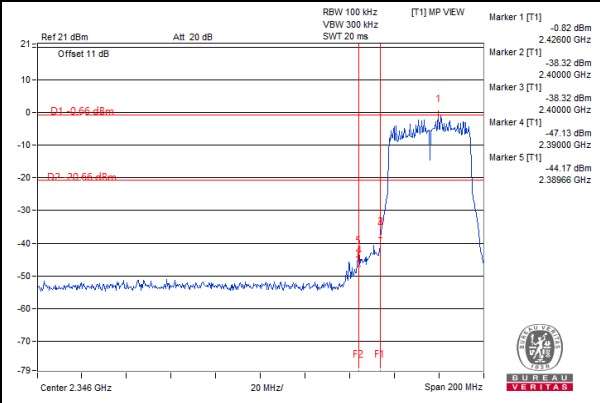
CH 6



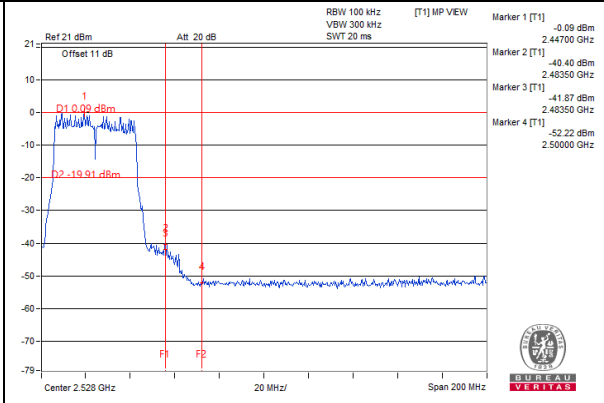
CH 9



CH 3 Band edge



CH 9 Band edge

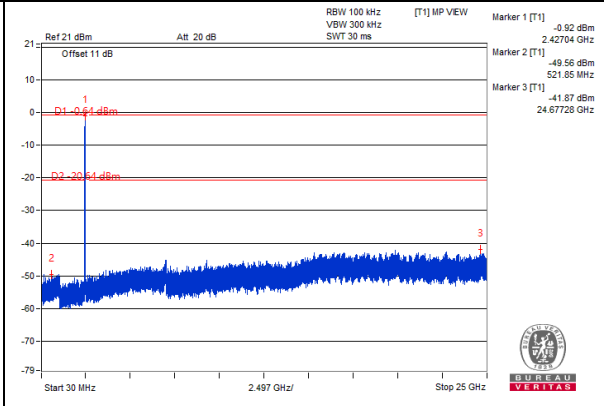
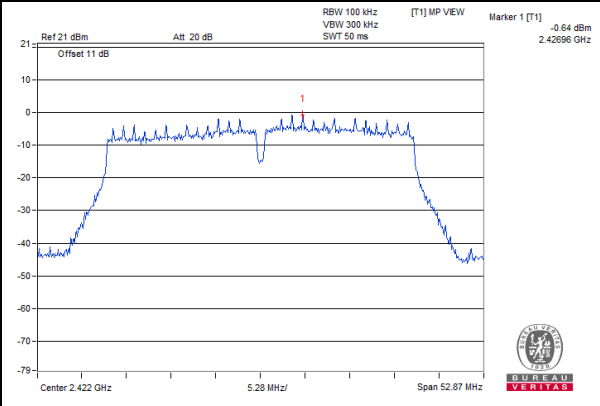




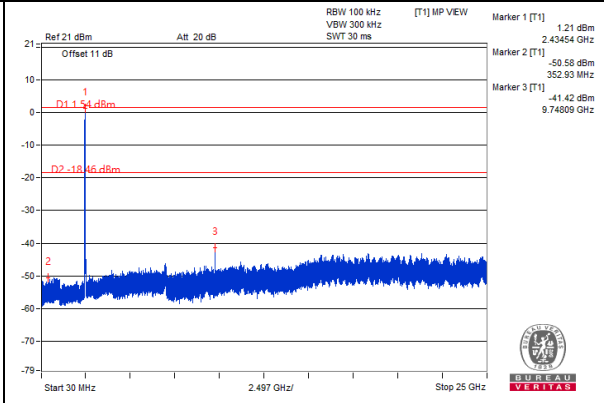
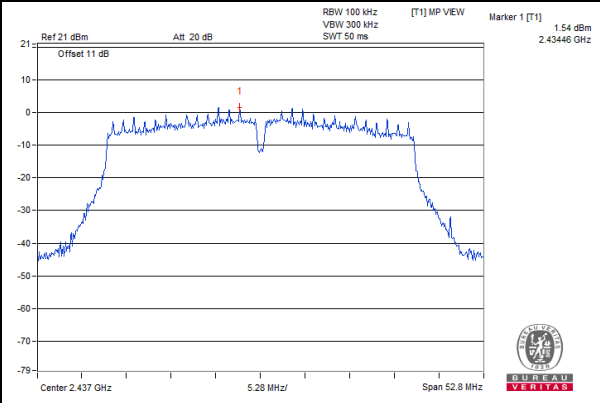
BUREAU VERITAS

### 802.11n (HT40): Chain 1

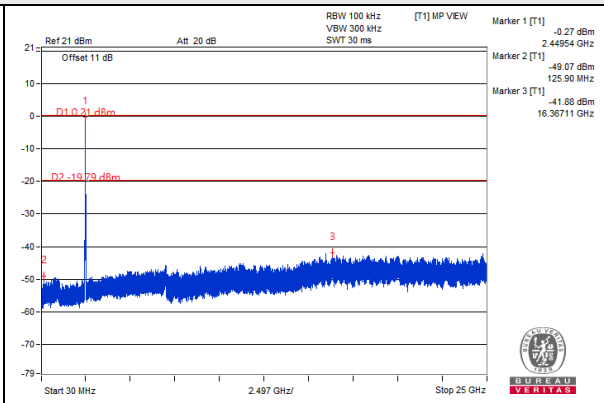
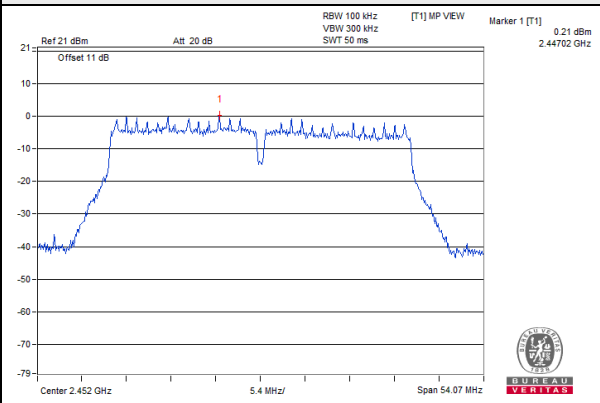
#### CH 3



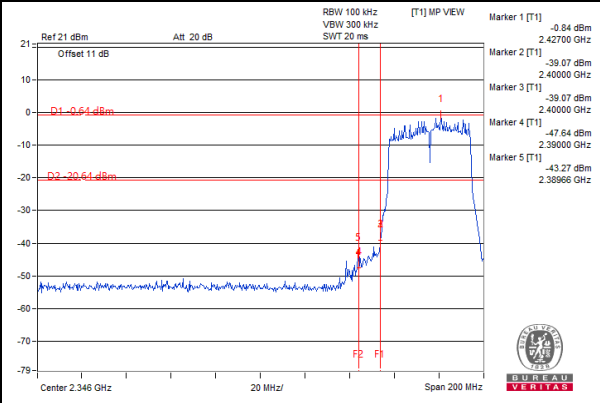
#### CH 6



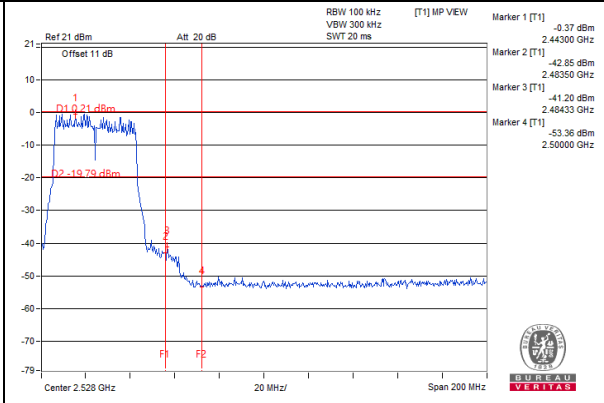
#### CH 9



#### CH 3 Band edge

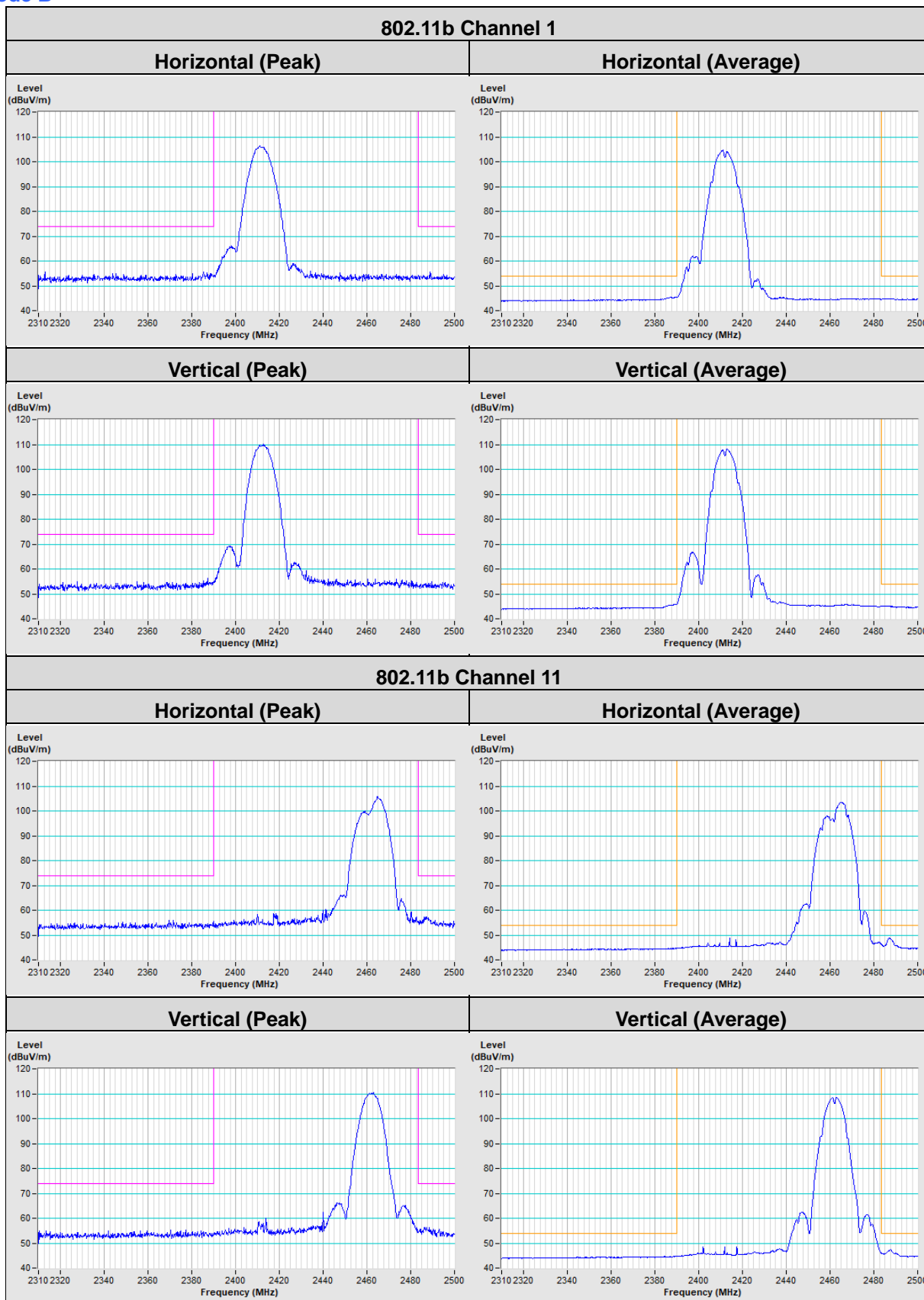


#### CH 9 Band edge

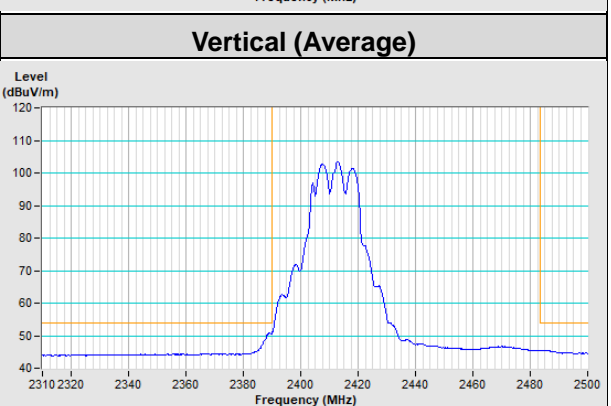
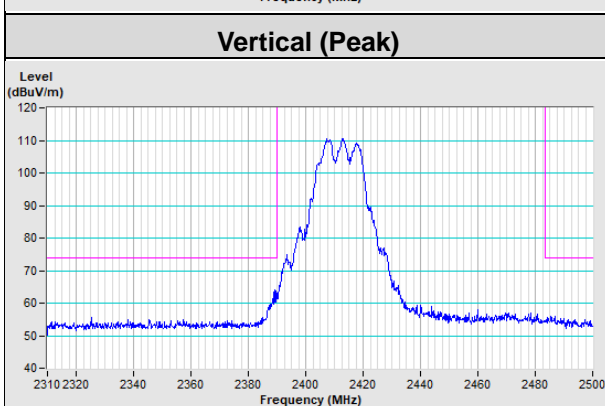
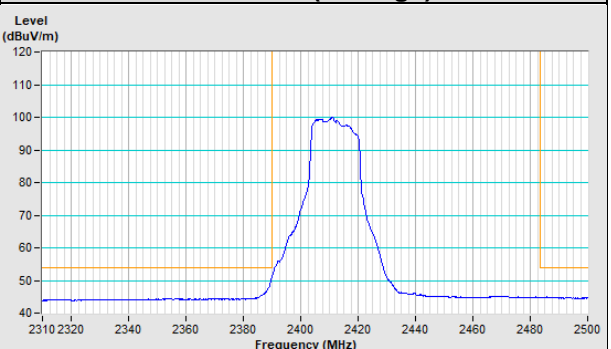
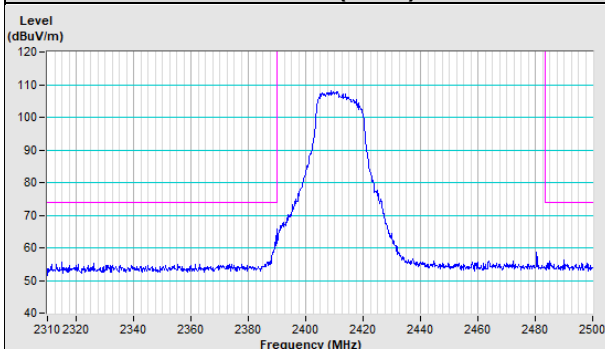


# Annex A- Band Edge Measurement

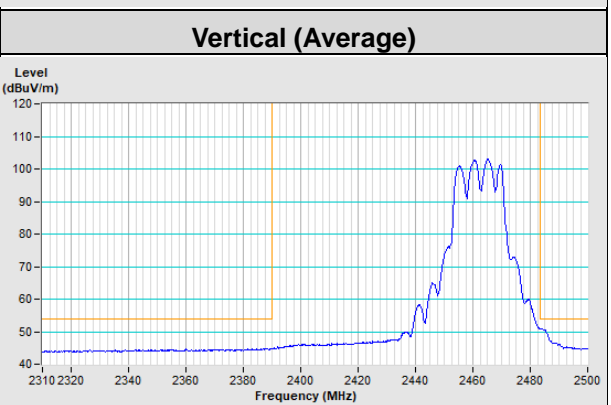
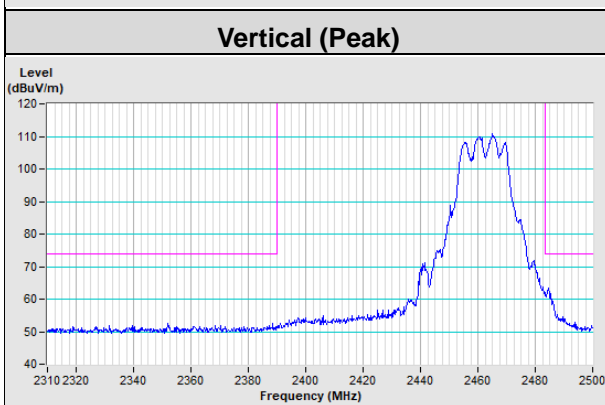
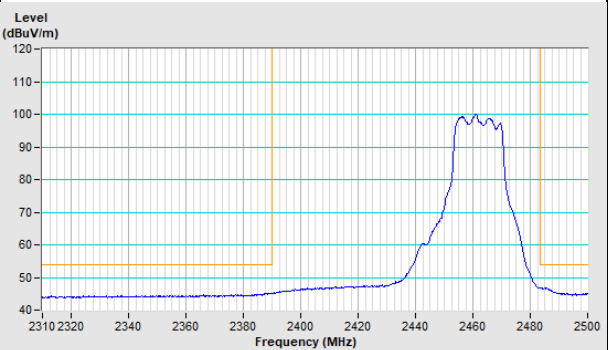
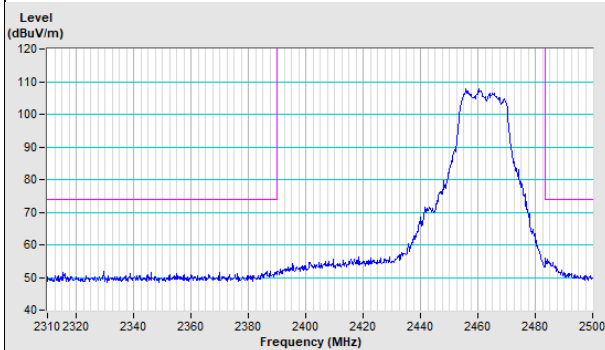
## Mode B

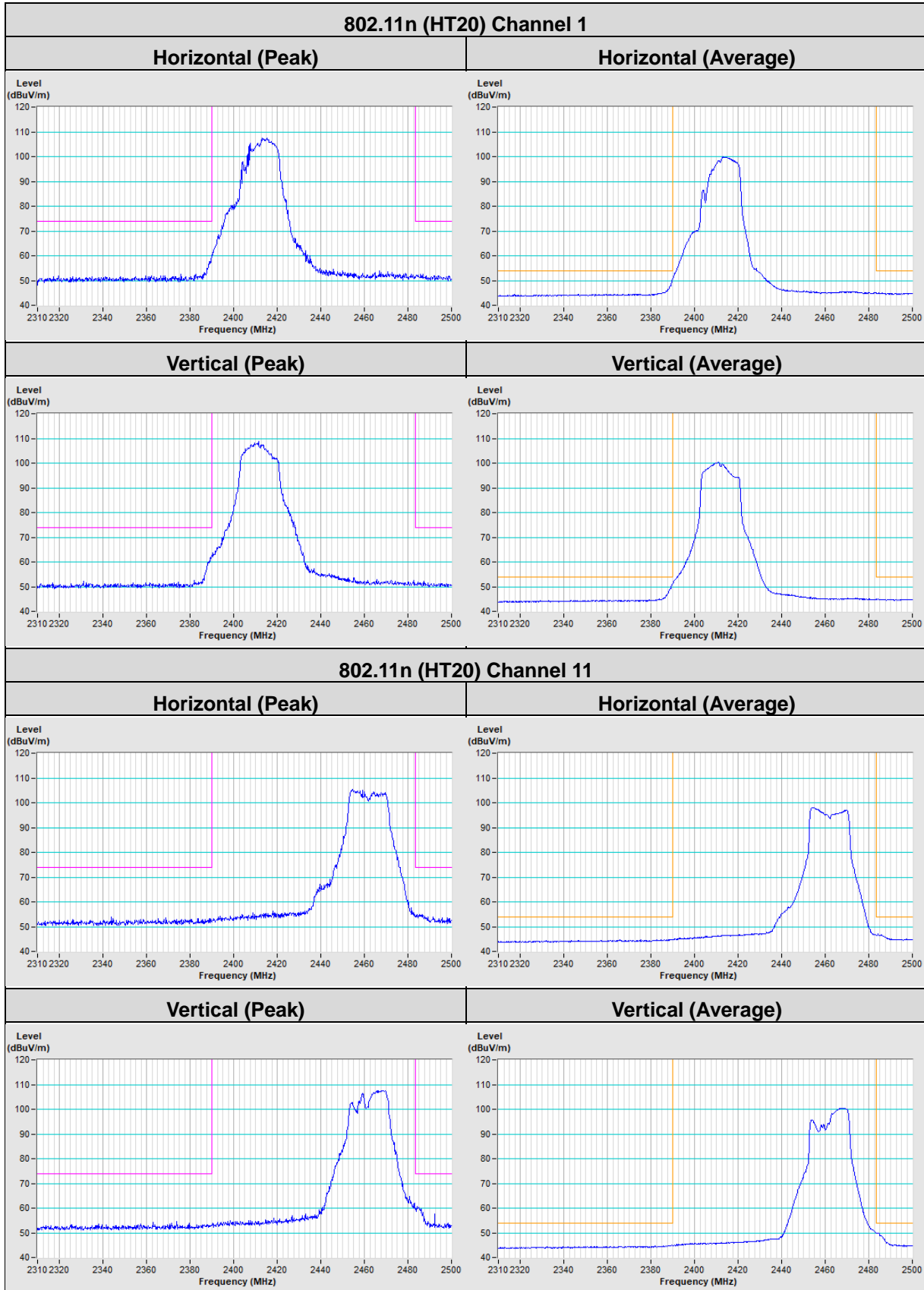


### 802.11g Channel 1



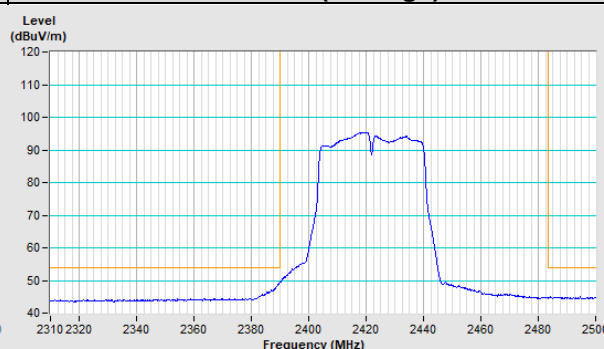
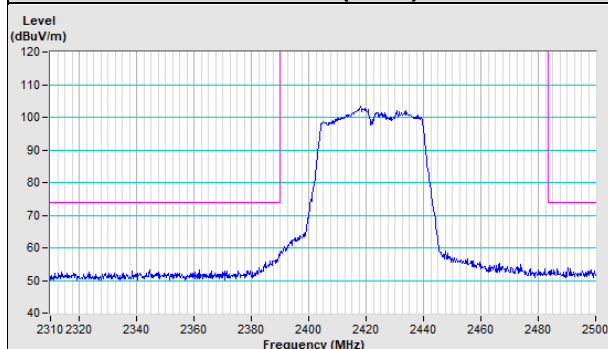
### 802.11g Channel 11



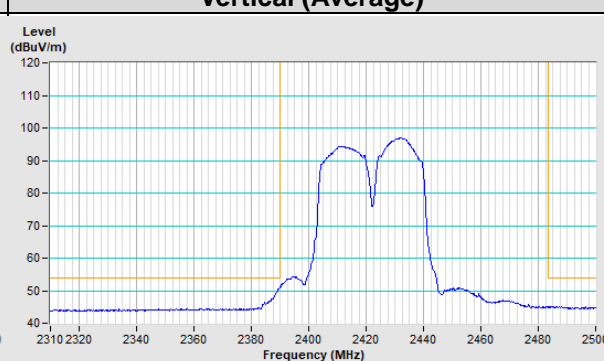
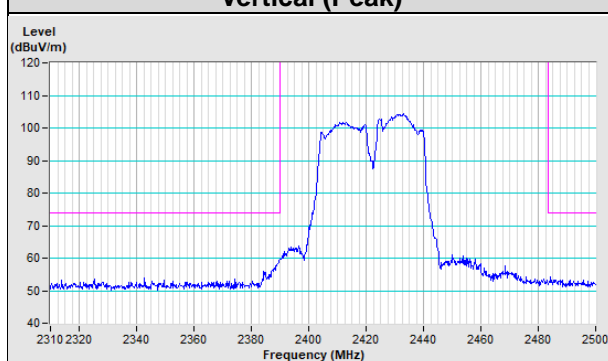


### 802.11n (HT40) Channel 3

<b>Horizontal (Peak)</b>	<b>Horizontal (Average)</b>
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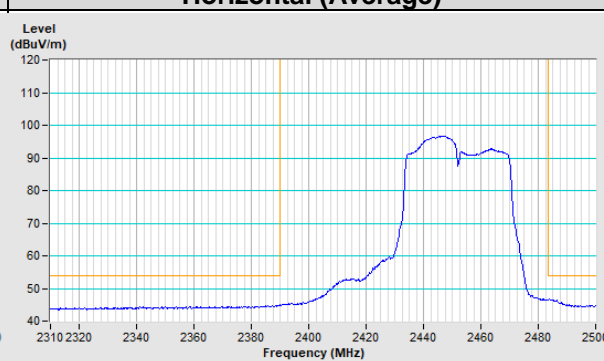
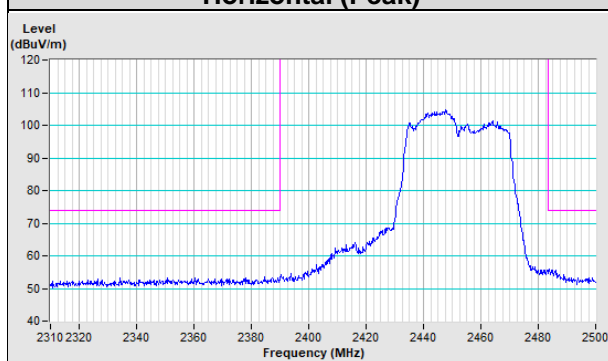


<b>Vertical (Peak)</b>	<b>Vertical (Average)</b>
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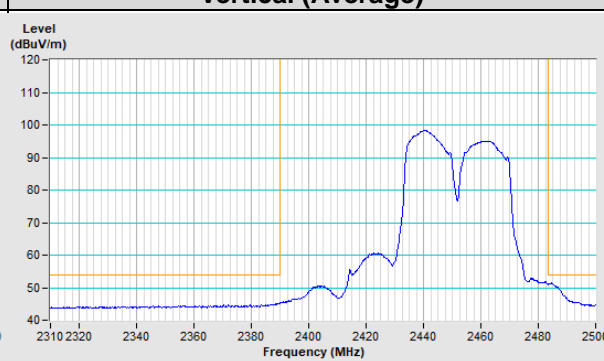
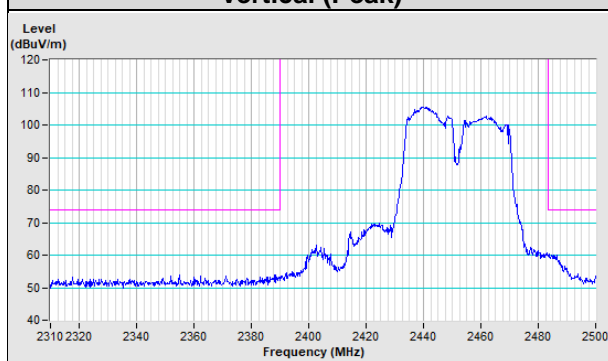


### 802.11n (HT40) Channel 9

<b>Horizontal (Peak)</b>	<b>Horizontal (Average)</b>
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<b>Vertical (Peak)</b>	<b>Vertical (Average)</b>
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## 5 Pictures of Test Arrangements

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



## 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.

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**Web Site:** [www.bureauveritas-adt.com](http://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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