FCC Test Report

Report No.:	RFBCWK-WTW-P20090194
FCC ID:	MSQ-USB8C00
Test Model:	USB-AC58
Received Date:	Sep. 09, 2020
Test Date:	Feb. 02 ~ Jul. 20, 2021
Issued Date:	Jul. 21, 2021
Applicant:	ASUSTeK Computer INC.
Address:	1F., No. 15, Lide Rd., Beitou Dist., Taipei City 112, Taiwan
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
Test Location:	No. 19, Hwa Ya 2nd Rd., Wen Hwa Vil., Kwei Shan Dist., Taoyuan City 33383, TAIWAN
FCC Registration / Designation Number:	788550 / TW0003

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Release Control Record

Issue No.	Description	Date Issued
RFBCWK-WTW-P20090194	Original release.	Jul. 21, 2021

1 Certificate of Conformity

Product:	Wireless-AC 1300 Dual-band USB Adapter
Brand:	ASUS
Test Model:	USB-AC58
Sample Status:	Engineering sample
Applicant:	ASUSTeK Computer INC.
Test Date:	Feb. 02 ~ Jul. 20, 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 : _____ , **Date:** Jul. 21, 2021
Polly Chien / Specialist

Approved by : _____ , **Date:** Jul. 21, 2021
Bruce Chen / Senior 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 -15.03dB at 0.15000MHz.
15.205 / 15.209 / 15.247(d)	Radiated Emissions and Band Edge Measurement	Pass	Meet the requirement of limit. Minimum passing margin is -0.5dB at 2483.50MHz.
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 Reverse SMA not a standard connector.

Note:

1. For 2.4G 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.
2. 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) (±)
Conducted Emissions at mains ports	150kHz ~ 30MHz	2.79 dB
Radiated Emissions up to 1 GHz	9 kHz ~ 30 MHz	3.04 dB
	30MHz ~ 200MHz	3.59 dB
	200MHz ~1000MHz	3.60 dB
Radiated Emissions above 1 GHz	1GHz ~ 18GHz	2.29 dB
	18GHz ~ 40GHz	2.29 dB

2.2 Modification Record

There were no modifications required for compliance.

3 General Information

3.1 General Description of EUT

Product	Wireless-AC 1300 Dual-band USB Adapter
Brand	ASUS
Test Model	USB-AC58
Sample Status	Engineering sample
Power Supply rating	5.0Vdc (Host equipment or adapter)
Modulation Type	CCK, DQPSK, DBPSK for DSSS 256QAM, 64QAM, 16QAM, QPSK, BPSK for OFDM
Modulation Technology	DSSS, OFDM
Transfer Rate	802.11b:11/5.5/2/1Mbps 802.11g: 54/48/36/24/18/12/9/6Mbps 802.11n: up to 400Mbps
Operating Frequency	2412~2462MHz
Number of Channel	802.11b, 802.11g, 802.11n (HT20), 802.11ac (VHT20): 11 802.11n (HT40), 802.11ac (VHT40): 7
Output Power	443.809mW
Antenna Type	Refer to note
Antenna Connector	Refer to note
Accessory Device	NA
Cable Supplied	0.95m shielded USB cable without core

Note:

1. The EUT incorporates a MIMO function. Physically, the EUT provides 2 completed transmitters and 2 receivers.

Modulation Mode	TX Function
802.11b	2TX
802.11g	2TX
802.11n (HT20)	2TX
802.11n (HT40)	2TX
802.11n (VHT20)	2TX
802.11n (VHT40)	2TX

* The bandwidth and modulation are similar for HT20/HT40 on 802.11n mode and VHT20/VHT40 on 802.11n mode. Therefore the investigated worst case is the representative mode in test report. (Final test mode refer section 3.2.1)

2. The following antenna was provided to the EUT.

Ant. Type	Dipole	
Connecter Type	Reverse SMA	
Frequency	2.4GHz	5GHz
Antenna Gain(dBi)	2.07	3.61

* 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.

3. WLAN 2.4GHz & WLAN 5GHz technology cannot transmit at same time.

3.2 Description of Test Modes

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

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) and 802.11n (VHT40):

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	
-	√	√	√	√	-

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

Note:

1. The EUT had been pre-tested on the positioned of each 3 axis. The worst case was found when positioned on X-plane.
2. Radiated emission test (below 1GHz) and power line conducted emission test items chosen the worst fundamental frequency emission level.

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)	Remark
-	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 (VHT20)	1 to 11	1, 6, 10, 11	OFDM	BPSK	7.2	-
	802.11n (VHT40)	3 to 9	3, 6, 8, 9	OFDM	BPSK	15.0	-

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)	Remark
-	802.11n (VHT20)	1 to 11	6	OFDM	BPSK	7.2	-

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)	Remark
-	802.11n (VHT20)	1 to 11	6	OFDM	BPSK	7.2	-

Conducted Output Power 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)	Remark
-	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, 10, 11	OFDM	BPSK	6.5	-
	802.11n (HT40)	3 to 9	3, 6, 8, 9	OFDM	BPSK	13.5	-
	802.11n (VHT20)	1 to 11	1, 6, 10, 11	OFDM	BPSK	7.2	-
	802.11n (VHT40)	3 to 9	3, 6, 8, 9	OFDM	BPSK	15.0	-

Bandwidth, Power Spectral Density and Conducted Out of Band Emission 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)	Remark
-	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 (VHT20)	1 to 11	1, 6, 11	OFDM	BPSK	7.2	-
	802.11n (VHT40)	3 to 9	3, 6, 9	OFDM	BPSK	15.0	-

Test Condition:

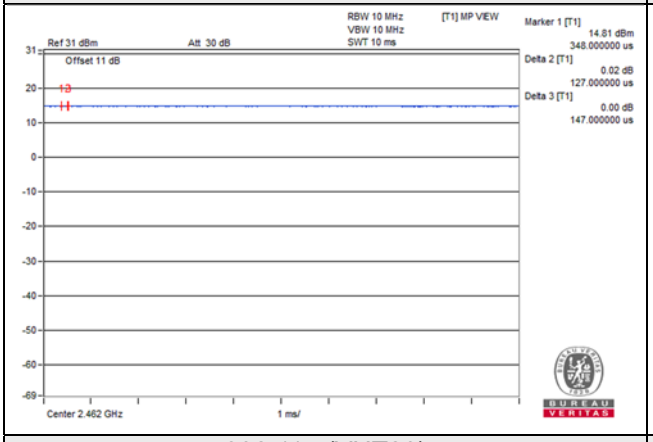
Applicable to	Environmental Conditions	Input Power (System)	Tested by
RE≥1G	22 deg. C, 68% RH 22 deg. C, 66% RH	120Vac, 60Hz	Rex Wang, Greg Lin
RE<1G	22 deg. C, 68% RH	120Vac, 60Hz	Rex Wang
PLC	25 deg. C, 75% RH	120Vac, 60Hz	Rex Wang
APCM	25 deg. C, 60% RH	120Vac, 60Hz	Gavin Wu

3.3 Duty Cycle of Test Signal

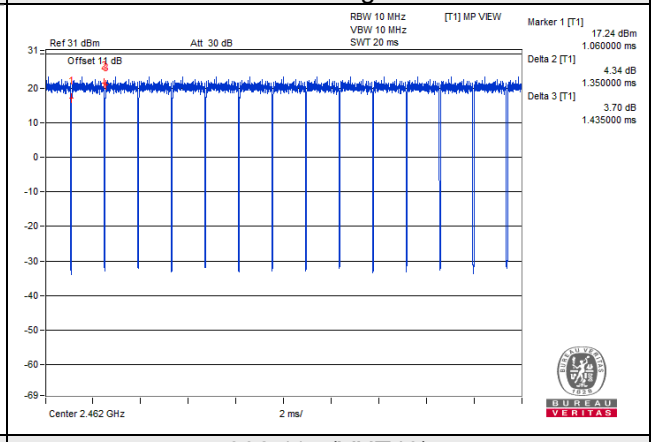
Duty cycle of test signal is ≥ 98%, duty factor is not required.
Duty cycle of test signal is < 98%, duty factor is required.

802.11b: Duty cycle of test signal is 100 %, duty factor is not required.
802.11g: Duty cycle = 1.350/1.435 = 0.941, Duty factor = 10 * log(1/0.941) = 0.26
802.11n (VHT20): Duty cycle = 1.250/1.325 = 0.943, Duty factor = 10 * log(1/0.943) = 0.25
802.11n (VHT40): Duty cycle = 0.627/0.687 = 0.913, Duty factor = 10 * log(1/0.913) = 0.40

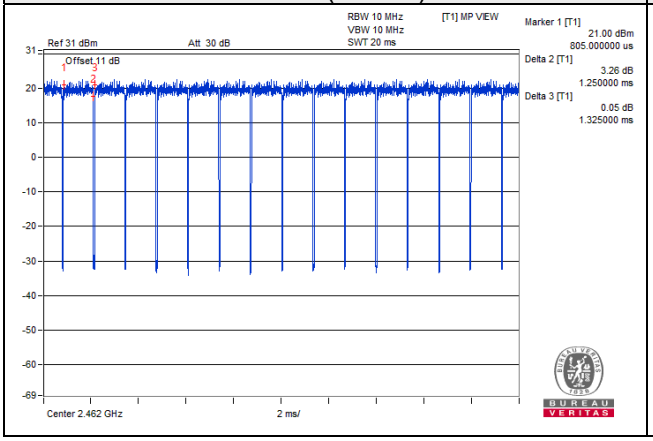
802.11b



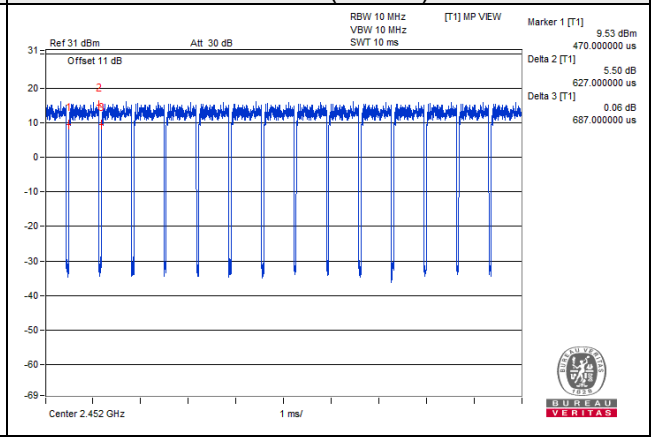
802.11g



802.11n (VHT20)



802.11n (VHT40)



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.

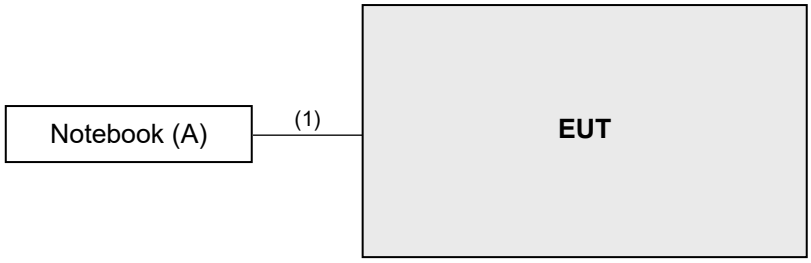
ID	Product	Brand	Model No.	Serial No.	FCC ID	Remarks
A.	Notebook	ASUS	P2420L	FCNXCV16385351D	FCC DoC Approved	-

Note:

1. All power cords of the above support units are non-shielded (1.8m).
2. Item A acted as a communication partner to transfer data.

ID	Descriptions	Qty.	Length (m)	Shielding (Yes/No)	Cores (Qty.)	Remarks
1.	USB cable	1	0.95	Y	0	Accessory of EUT

3.4.1 Configuration of System under Test



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.	Cal. Date	Cal. Due
Test Receiver KEYSIGHT	N9038A	MY55420137	Apr. 16, 2020	Apr. 15, 2021
			Apr. 09, 2021	Apr. 08, 2022
Spectrum Analyzer ROHDE & SCHWARZ	FSP40	100040	Sep. 16, 2020	Sep. 15, 2021
BILOG Antenna SCHWARZBECK	VULB9168	9168-160	Nov. 06, 2020	Nov. 05, 2021
HORN Antenna SCHWARZBECK	BBHA 9120 D	9120D-1169	Nov. 22, 2020	Nov. 21, 2021
HORN Antenna SCHWARZBECK	BBHA 9170	BBHA9170241	Nov. 22, 2020	Nov. 21, 2021
Preamplifier Agilent (Below 1GHz)	8447D	2944A10638	Jun. 08, 2020	Jun. 07, 2021
			Jun. 05, 2021	Jun. 04, 2022
Preamplifier Agilent (Above 1GHz)	8449B	3008A02367	Feb. 18, 2020	Feb. 17, 2021
			Feb. 17, 2021	Feb. 16, 2022
RF signal cable HUBER+SUHNER&EMCI	SUCOFLEX 104 & EMC104-SM-SM8000	CABLE-CH9-02 (248780+171006)	Jan. 16, 2021	Jan. 15, 2022
RF signal cable HUBER+SUHNER	SUCOFLEX 104	CABLE-CH9-(250795 /4)	Jan. 16, 2021	Jan. 15, 2022
RF signal cable Woken	8D-FB	Cable-CH9-01	Jun. 08, 2020	Jun. 07, 2021
			Jun. 05, 2021	Jun. 04, 2022
Software BV ADT	ADT_Radiated_ V7.6.15.9.5	NA	NA	NA
Antenna Tower EMCO	2070/2080	512.835.4684	NA	NA
Turn Table EMCO	2087-2.03	NA	NA	NA
Antenna Tower &Turn BV ADT	AT100	AT93021705	NA	NA
Turn Table BV ADT	TT100	TT93021705	NA	NA
Turn Table Controller BV ADT	SC100	SC93021705	NA	NA
Boresight Antenna Fixture	FBA-01	FBA-SIP01	NA	NA
High Speed Power Meter	ML2495A	1232002	Dec. 09, 2020	Dec. 08, 2021
Power Sensor	MA2411B	1207325	Dec. 09, 2020	Dec. 08, 2021

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 9.

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 detect 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 ≥ 1/T (Duty cycle < 98%) or 10Hz (Duty cycle ≥ 98%) for Average detection (AV) at frequency above 1GHz.

   (11b: RBW = 1 MHz, VBW =10Hz ; 11g: RBW = 1 MHz, VBW = 1kHz ; 11ac (VHT20): RBW = 1 MHz, VBW = 1kHz ; 11ac (VHT40): RBW = 1 MHz, VBW = 3kHz)

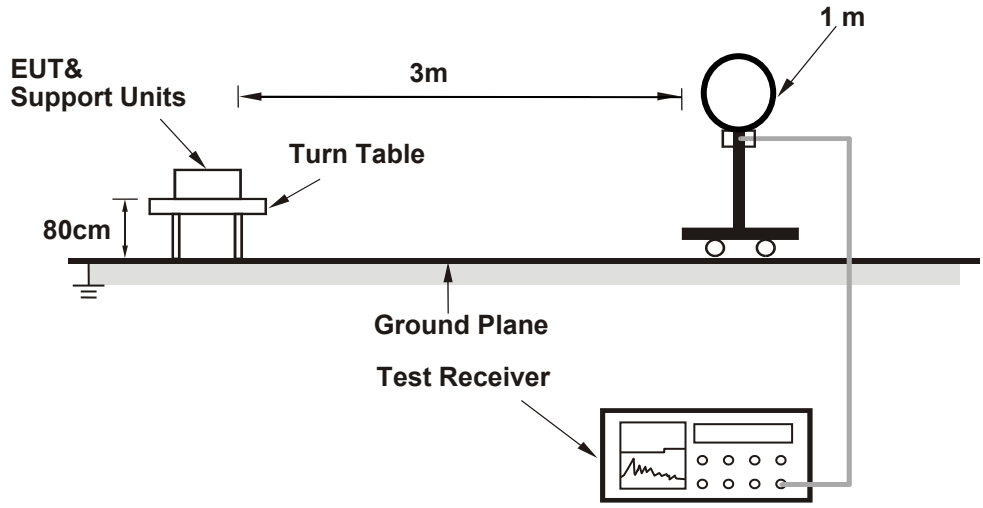
4. All modes of operation were investigated and the worst-case emissions are reported.

4.1.4 Deviation from Test Standard

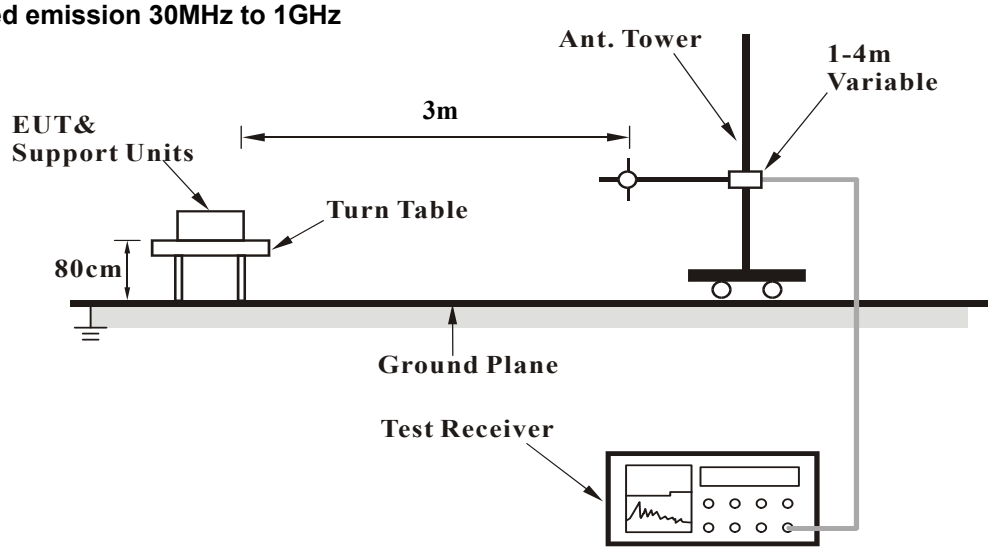
No deviation.

4.1.5 Test Setup

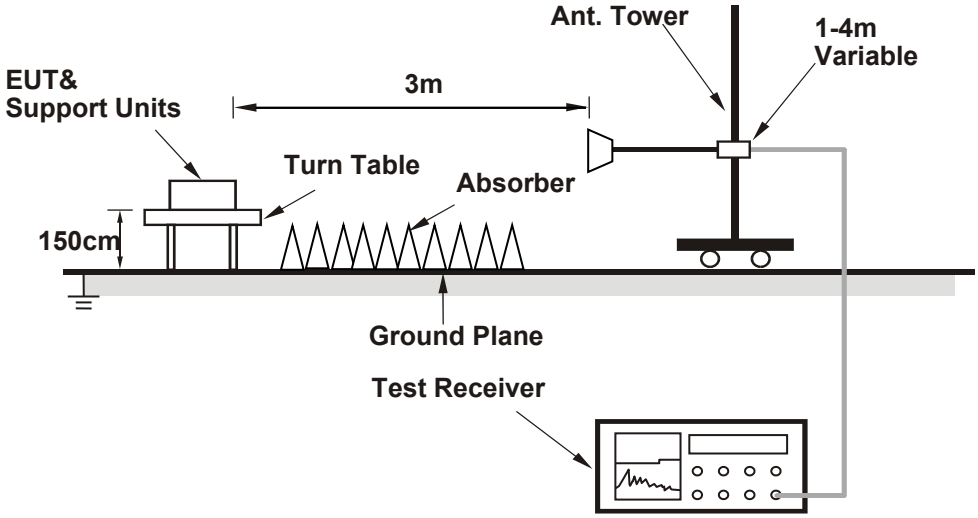
For Radiated emission below 30MHz



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

Mode A

a. Placed the EUT on the testing table.
b. Set the EUT under transmission condition continuously at specific channel frequency.

Mode B

a. Placed the EUT on the testing table.
b. Prepared a notebook to act as a communication partner and placed it outside of testing area.
c. The communication partner connected with EUT via USB cable and ran a test program (provided by manufacturer) to enable EUT under transmission condition continuously at specific channel frequency.

4.1.7 Test Results

Above 1GHz worst-Case data:

802.11b

CHANNEL	TX Channel 1	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 25GHz		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2390.00	59.9 PK	74.0	-14.1	1.65 H	85	28.7	31.2
2	2390.00	52.9 AV	54.0	-1.1	1.65 H	85	21.7	31.2
3	*2412.00	112.9 PK			1.66 H	88	81.7	31.2
4	*2412.00	109.7 AV			1.66 H	88	78.5	31.2
5	4824.00	48.9 PK	74.0	-25.1	2.30 H	84	46.9	2.0
6	4824.00	44.9 AV	54.0	-9.1	2.30 H	84	42.9	2.0
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2390.00	58.2 PK	74.0	-15.8	1.03 V	127	27.0	31.2
2	2390.00	48.7 AV	54.0	-5.3	1.03 V	127	17.5	31.2
3	*2412.00	108.8 PK			1.03 V	127	77.6	31.2
4	*2412.00	105.6 AV			1.03 V	127	74.4	31.2
5	4824.00	46.7 PK	74.0	-27.3	3.93 V	337	44.7	2.0
6	4824.00	40.8 AV	54.0	-13.2	3.93 V	337	38.8	2.0

Remarks:

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

CHANNEL	TX Channel 6	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 25GHz		

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	114.0 PK			1.65 H	86	82.9	31.1
2	*2437.00	110.8 AV			1.65 H	86	79.7	31.1
3	4824.00	53.6 PK	74.0	-20.4	2.13 H	89	51.6	2.0
4	4824.00	51.5 AV	54.0	-2.5	2.13 H	89	49.5	2.0
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2437.00	109.6 PK			1.00 V	120	78.5	31.1
2	*2437.00	106.4 AV			1.00 V	120	75.3	31.1
3	4874.00	50.6 PK	74.0	-23.4	3.95 V	342	48.5	2.1
4	4874.00	47.2 AV	54.0	-6.8	3.95 V	342	45.1	2.1

Remarks:

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

CHANNEL	TX Channel 11	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 25GHz		

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	113.4 PK			1.68 H	87	82.3	31.1
2	*2462.00	110.2 AV			1.68 H	87	79.1	31.1
3	2483.50	59.6 PK	74.0	-14.4	4.00 H	87	28.5	31.1
4	2483.50	52.6 AV	54.0	-1.4	4.00 H	87	21.5	31.1
5	4924.00	48.7 PK	74.0	-25.3	2.22 H	84	46.5	2.2
6	4924.00	44.7 AV	54.0	-9.3	2.22 H	84	42.5	2.2
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2462.00	109.2 PK			1.05 V	118	78.1	31.1
2	*2462.00	106.0 AV			1.05 V	118	74.9	31.1
3	2483.50	56.5 PK	74.0	-17.5	1.05 V	118	25.4	31.1
4	2483.50	49.0 AV	54.0	-5.0	1.05 V	118	17.9	31.1
5	4924.00	46.7 PK	74.0	-27.3	4.00 V	336	44.5	2.2
6	4924.00	40.8 AV	54.0	-13.2	4.00 V	336	38.6	2.2

Remarks:

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

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CHANNEL	TX Channel 1	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 25GHz		

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	70.5 PK	74.0	-3.5	1.37 H	192	39.3	31.2
2	2390.00	51.6 AV	54.0	-2.4	1.37 H	192	20.4	31.2
3	*2412.00	109.2 PK			1.37 H	192	78.0	31.2
4	*2412.00	98.9 AV			1.37 H	192	67.7	31.2
5	4824.00	47.0 PK	74.0	-27.0	1.69 H	165	44.9	2.1
6	4824.00	35.9 AV	54.0	-18.1	1.69 H	165	33.8	2.1
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	71.7 PK	74.0	-2.3	2.88 V	72	40.5	31.2
2	2390.00	53.1 AV	54.0	-0.9	2.88 V	72	21.9	31.2
3	*2412.00	113.1 PK			2.88 V	72	81.9	31.2
4	*2412.00	103.1 AV			2.88 V	72	71.9	31.2
5	4824.00	50.5 PK	74.0	-23.5	2.93 V	351	48.4	2.1
6	4824.00	43.1 AV	54.0	-10.9	2.93 V	351	41.0	2.1

Remarks:

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

CHANNEL	TX Channel 6	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 25GHz		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2437.00	111.0 PK			1.56 H	194	79.9	31.1
2	*2437.00	101.2 AV			1.56 H	194	70.1	31.1
3	4874.00	47.7 PK	74.0	-26.3	1.72 H	169	45.6	2.1
4	4874.00	36.5 AV	54.0	-17.5	1.72 H	169	34.4	2.1
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2437.00	117.5 PK			3.13 V	75	86.4	31.1
2	*2437.00	107.8 AV			3.13 V	75	76.7	31.1
3	4874.00	56.7 PK	74.0	-17.3	2.90 V	350	54.6	2.1
4	4874.00	44.5 AV	54.0	-9.5	2.90 V	350	42.4	2.1

Remarks:

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

CHANNEL	TX Channel 11	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 25GHz		

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	105.0 PK			2.21 H	182	73.9	31.1
2	*2462.00	95.6 AV			2.21 H	182	64.5	31.1
3	2483.50	62.9 PK	74.0	-11.1	2.21 H	182	31.8	31.1
4	2483.50	46.9 AV	54.0	-7.1	2.21 H	182	15.8	31.1
5	4924.00	42.3 PK	74.0	-31.7	1.65 H	169	40.2	2.1
6	4924.00	34.3 AV	54.0	-19.7	1.65 H	169	32.2	2.1
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	110.8 PK			2.93 V	43	79.7	31.1
2	*2462.00	100.5 AV			2.93 V	43	69.4	31.1
3	2483.50	67.1 PK	74.0	-6.9	2.93 V	43	36.0	31.1
4	2483.50	53.4 AV	54.0	-0.6	2.93 V	43	22.3	31.1
5	4924.00	43.0 PK	74.0	-31.0	3.22 V	351	40.9	2.1
6	4924.00	37.6 AV	54.0	-16.4	3.22 V	351	35.5	2.1

Remarks:

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

802.11n (VHT20)

CHANNEL	TX Channel 1	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 25GHz		

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	69.2 PK	74.0	-4.8	2.17 H	180	38.0	31.2
2	2390.00	47.5 AV	54.0	-6.5	2.17 H	180	16.3	31.2
3	*2412.00	106.0 PK			2.17 H	180	74.8	31.2
4	*2412.00	97.2 AV			2.17 H	180	66.0	31.2
5	4824.00	46.9 PK	74.0	-27.1	1.65 H	172	44.8	2.1
6	4824.00	35.7 AV	54.0	-18.3	1.65 H	172	33.6	2.1
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	73.0 PK	74.0	-1.0	3.02 V	43	41.8	31.2
2	2390.00	49.4 AV	54.0	-4.6	3.02 V	43	18.2	31.2
3	*2412.00	111.0 PK			3.02 V	43	79.8	31.2
4	*2412.00	101.4 AV			3.02 V	43	70.2	31.2
5	4824.00	48.0 PK	74.0	-26.0	3.02 V	355	45.9	2.1
6	4824.00	40.3 AV	54.0	-13.7	3.02 V	355	38.2	2.1

Remarks:

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

CHANNEL	TX Channel 6	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 25GHz		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2437.00	110.7 PK			2.20 H	177	79.6	31.1
2	*2437.00	101.2 AV			2.20 H	177	70.1	31.1
3	4874.00	49.3 PK	74.0	-24.7	1.72 H	163	47.2	2.1
4	4874.00	39.6 AV	54.0	-14.4	1.72 H	163	37.5	2.1
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	116.0 PK			2.86 V	65	84.9	31.1
2	*2437.00	106.7 AV			2.86 V	65	75.6	31.1
3	4874.00	57.2 PK	74.0	-16.8	2.97 V	355	55.1	2.1
4	4874.00	45.6 AV	54.0	-8.4	2.97 V	355	43.5	2.1

Remarks:

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

CHANNEL	TX Channel 10	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 25GHz		

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	*2457.00	111.5 PK			1.32 H	173	77.8	33.7
2	*2457.00	101.9 AV			1.32 H	173	68.2	33.7
3	2483.50	66.4 PK	74.0	-7.6	1.32 H	173	32.7	33.7
4	2483.50	50.3 AV	54.0	-3.7	1.32 H	173	16.6	33.7
5	4914.00	60.9 PK	74.0	-13.1	3.64 H	278	53.7	7.2
6	4914.00	44.0 AV	54.0	-10.0	3.64 H	278	36.8	7.2
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2457.00	114.3 PK			3.17 V	68	80.6	33.7
2	*2457.00	104.8 AV			3.17 V	68	71.1	33.7
3	2483.50	71.8 PK	74.0	-2.2	3.17 V	68	38.1	33.7
4	2483.50	53.0 AV	54.0	-1.0	3.17 V	68	19.3	33.7
5	4914.00	62.6 PK	74.0	-11.4	3.08 V	349	55.4	7.2
6	4914.00	45.8 AV	54.0	-8.2	3.08 V	349	38.6	7.2

Remarks:

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

CHANNEL	TX Channel 11	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 25GHz		

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	103.8 PK			2.84 H	182	72.7	31.1
2	*2462.00	94.6 AV			2.84 H	182	63.5	31.1
3	2483.50	63.1 PK	74.0	-10.9	2.84 H	182	32.0	31.1
4	2483.50	47.1 AV	54.0	-6.9	2.84 H	182	16.0	31.1
5	4924.00	42.3 PK	74.0	-31.7	1.68 H	165	40.2	2.1
6	4924.00	34.3 AV	54.0	-19.7	1.68 H	165	32.2	2.1
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	109.2 PK			2.93 V	42	78.1	31.1
2	*2462.00	99.4 AV			2.93 V	42	68.3	31.1
3	2483.50	70.3 PK	74.0	-3.7	2.93 V	42	39.2	31.1
4	**2483.50**	**53.5 AV**	**54.0**	**-0.5**	**2.93 V**	**42**	**22.4**	**31.1**
5	4924.00	43.2 PK	74.0	-30.8	3.24 V	356	41.1	2.1
6	4924.00	37.1 AV	54.0	-16.9	3.24 V	356	35.0	2.1

Remarks:

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

802.11n (VHT40)

CHANNEL	TX Channel 3	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 25GHz		

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	60.9 PK	74.0	-13.1	2.12 H	181	29.7	31.2
2	2390.00	48.1 AV	54.0	-5.9	2.12 H	181	16.9	31.2
3	*2422.00	101.3 PK			2.12 H	181	70.1	31.2
4	*2422.00	92.1 AV			2.12 H	181	60.9	31.2
5	4844.00	42.3 PK	74.0	-31.7	1.72 H	161	40.2	2.1
6	4844.00	35.7 AV	54.0	-18.3	1.72 H	161	33.6	2.1
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2390.00	68.0 PK	74.0	-6.0	3.04 V	38	36.8	31.2
2	2390.00	53.3 AV	54.0	-0.7	3.04 V	38	22.1	31.2
3	*2422.00	106.9 PK			3.04 V	38	75.7	31.2
4	*2422.00	97.5 AV			3.04 V	38	66.3	31.2
5	4844.00	45.1 PK	74.0	-28.9	2.95 V	350	43.0	2.1
6	4844.00	39.9 AV	54.0	-14.1	2.95 V	350	37.8	2.1

Remarks:

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

CHANNEL	TX Channel 6	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 25GHz		

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	101.0 PK			2.18 H	178	69.9	31.1
2	*2437.00	91.8 AV			2.18 H	178	60.7	31.1
3	2483.50	59.2 PK	74.0	-14.8	2.18 H	178	28.1	31.1
4	2483.50	46.7 AV	54.0	-7.3	2.18 H	178	15.6	31.1
5	4874.00	42.3 PK	74.0	-31.7	1.75 H	158	40.2	2.1
6	4874.00	34.4 AV	54.0	-19.6	1.75 H	158	32.3	2.1
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	107.4 PK			3.13 V	72	76.3	31.1
2	*2437.00	98.5 AV			3.13 V	72	67.4	31.1
3	2483.50	64.8 PK	74.0	-9.2	3.13 V	72	33.7	31.1
4	2483.50	53.2 AV	54.0	-0.8	3.13 V	72	22.1	31.1
5	4874.00	44.3 PK	74.0	-29.7	3.30 V	353	42.2	2.1
6	4874.00	39.3 AV	54.0	-14.7	3.30 V	353	37.2	2.1

Remarks:

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

CHANNEL	TX Channel 8	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 25GHz		

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	*2447.00	102.8 PK			1.38 H	181	69.1	33.7
2	*2447.00	92.7 AV			1.38 H	181	59.0	33.7
3	2483.50	64.8 PK	74.0	-9.2	1.38 H	181	31.1	33.7
4	2483.50	52.2 AV	54.0	-1.8	1.38 H	181	18.5	33.7
5	4894.00	58.5 PK	74.0	-15.5	3.52 H	268	51.3	7.2
6	4894.00	42.1 AV	54.0	-11.9	3.52 H	268	34.9	7.2
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2447.00	105.9 PK			3.18 V	125	72.2	33.7
2	*2447.00	95.8 AV			3.18 V	125	62.1	33.7
3	2483.50	66.8 PK	74.0	-7.2	1.38 V	125	33.1	33.7
4	2483.50	52.8 AV	54.0	-1.2	1.38 V	125	19.1	33.7
5	4894.00	59.9 PK	74.0	-14.1	3.14 V	343	52.7	7.2
6	4894.00	44.8 AV	54.0	-9.2	3.14 V	343	37.6	7.2

Remarks:

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

CHANNEL	TX Channel 9	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 25GHz		

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	97.7 PK			2.20 H	180	66.6	31.1
2	*2452.00	88.2 AV			2.20 H	180	57.1	31.1
3	2483.50	57.7 PK	74.0	-16.3	2.20 H	180	26.6	31.1
4	2483.50	45.9 AV	54.0	-8.1	2.20 H	180	14.8	31.1
5	4904.00	42.3 PK	74.0	-31.7	1.79 H	169	40.3	2.0
6	4904.00	34.2 AV	54.0	-19.8	1.79 H	169	32.2	2.0
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2452.00	103.0 PK			2.60 V	17	71.9	31.1
2	*2452.00	94.1 AV			2.60 V	17	63.0	31.1
3	2483.50	65.4 PK	74.0	-8.6	2.60 V	17	34.3	31.1
4	2483.50	53.4 AV	54.0	-0.6	2.60 V	17	22.3	31.1
5	4904.00	45.3 PK	74.0	-28.7	3.14 V	359	43.3	2.0
6	4904.00	39.6 AV	54.0	-14.4	3.14 V	359	37.6	2.0

Remarks:

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

Below 1GHz worst-case data:

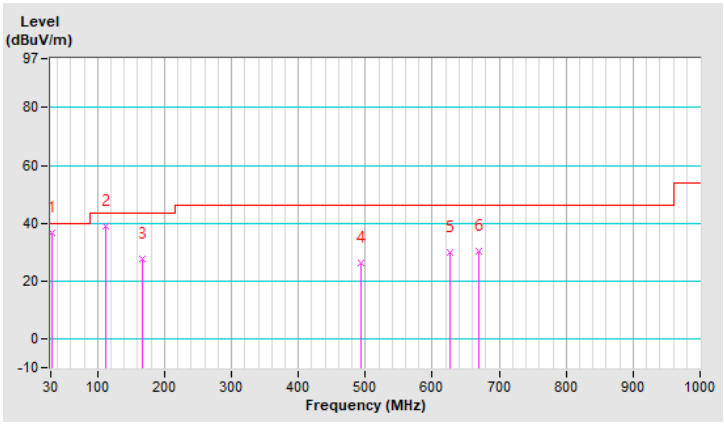
802.11n (VHT20)

CHANNEL	TX Channel 6	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	9kHz ~ 1GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	31.94	36.8 QP	40.0	-3.2	1.00 H	325	47.1	-10.3
2	112.45	38.9 QP	43.5	-4.6	1.50 H	85	50.3	-11.4
3	167.74	27.7 QP	43.5	-15.8	1.25 H	246	36.2	-8.5
4	492.69	26.3 QP	46.0	-19.7	1.00 H	175	29.1	-2.8
5	625.58	29.9 QP	46.0	-16.1	2.00 H	104	29.9	0.0
6	670.20	30.4 QP	46.0	-15.6	1.00 H	62	29.8	0.6

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit 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.

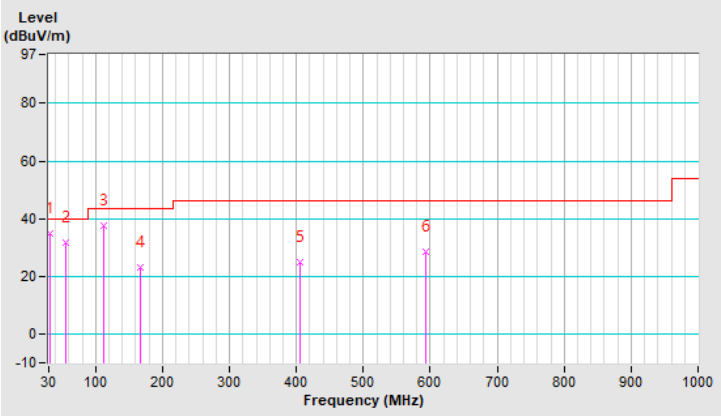


CHANNEL	TX Channel 6	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	9kHz ~ 1GHz		

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	32.91	35.1 QP	40.0	-4.9	2.00 V	221	45.5	-10.4
2	56.19	31.9 QP	40.0	-8.1	1.00 V	16	40.9	-9.0
3	112.45	37.5 QP	43.5	-6.0	1.50 V	16	48.9	-11.4
4	167.74	23.2 QP	43.5	-20.3	1.25 V	16	31.7	-8.5
5	406.36	25.0 QP	46.0	-21.0	1.00 V	268	29.7	-4.7
6	593.57	28.7 QP	46.0	-17.3	1.50 V	315	29.4	-0.7

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit 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

Tested date: Feb. 19, 2021

Description & Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Due
Test Receiver ROHDE & SCHWARZ	ESR3	102783	Jan. 06, 2021	Jan. 05, 2022
RF signal cable (with 10dB PAD) Woken	5D-FB	Cable-cond2-01	Sep. 04, 2020	Sep. 03, 2021
LISN ROHDE & SCHWARZ (EUT)	ESH2-Z5	100100	Jan. 18, 2021	Jan. 17, 2022
V-LISN SCHWARZBECK (Peripheral)	NNBL 8226-2	8226-142	Jul. 31, 2020	Jul. 30, 2021
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 2 (Conduction 2).
3. The VCCI Site Registration No. is C-12047.

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/ 50uH of coupling impedance for the measuring instrument.

b. Both lines of the power mains connected to the EUT were checked for maximum conducted interference.

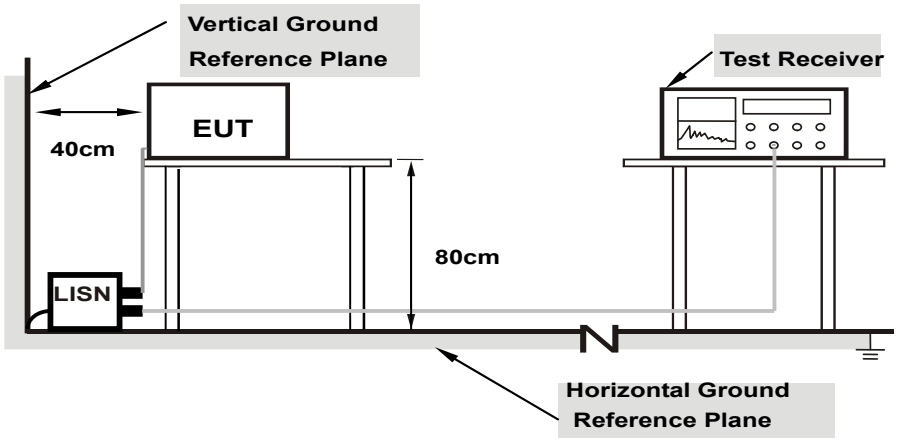
c. The frequency range from 150kHz to 30MHz was searched. Emission levels under (Limit - 20dB) was not recorded.

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

Same as 4.1.6.

4.2.7 Test Results

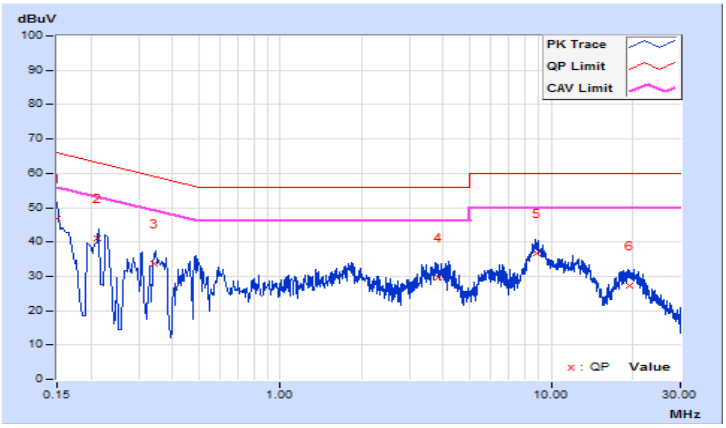
Worst-case data: 802.11n (VHT20)

Phase	Line (L)	Detector Function	Quasi-Peak (QP) / Average (AV)
Channel	TX Channel 6		

No	Freq.	Corr. Factor	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	**0.15000**	**10.07**	**36.87**	**30.90**	**46.94**	**40.97**	**66.00**	**56.00**	**-19.06**	**-15.03**
2	0.21015	10.08	31.04	15.80	41.12	25.88	63.20	53.20	-22.08	-27.32
3	0.34124	10.09	23.74	10.01	33.83	20.10	59.17	49.17	-25.34	-29.07
4	3.81000	10.21	19.51	9.88	29.72	20.09	56.00	46.00	-26.28	-25.91
5	8.82200	10.30	26.38	19.83	36.68	30.13	60.00	50.00	-23.32	-19.87
6	19.41400	10.44	16.88	8.40	27.32	18.84	60.00	50.00	-32.68	-31.16

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.

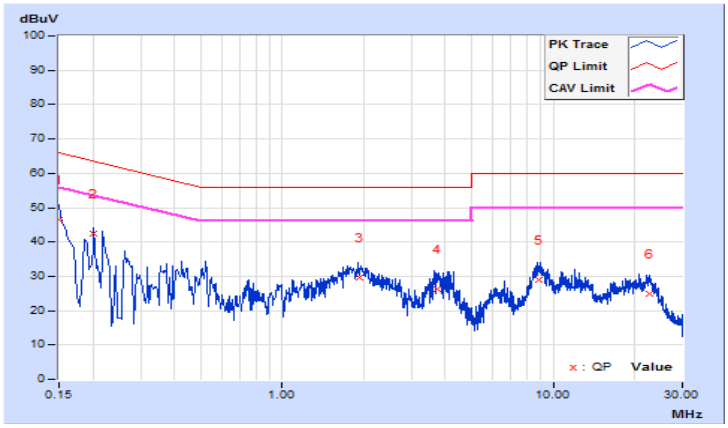


Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)
Channel	TX Channel 6		

No	Freq.	Corr. Factor	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15000	10.08	36.24	28.75	46.32	38.83	66.00	56.00	-19.68	-17.17
2	0.19989	10.08	32.27	15.62	42.35	25.70	63.62	53.62	-21.27	-27.92
3	1.91648	10.17	19.31	9.33	29.48	19.50	56.00	46.00	-26.52	-26.50
4	3.73237	10.25	15.90	6.58	26.15	16.83	56.00	46.00	-29.85	-29.17
5	8.82600	10.38	18.66	11.37	29.04	21.75	60.00	50.00	-30.96	-28.25
6	22.58600	10.58	14.25	6.56	24.83	17.14	60.00	50.00	-35.17	-32.86

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.

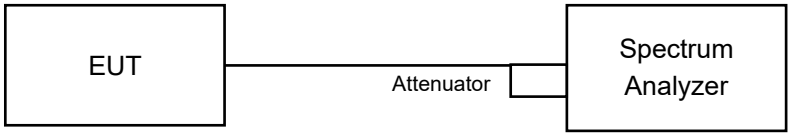


4.3 6dB Bandwidth Measurement

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) ≥ 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 Result

802.11b

Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
1	2412	9.13	9.12	0.5	Pass
6	2437	9.13	9.13	0.5	Pass
11	2462	9.58	9.13	0.5	Pass

802.11g

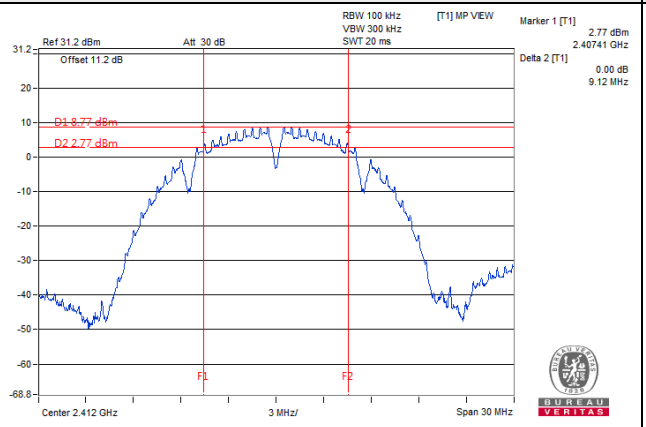
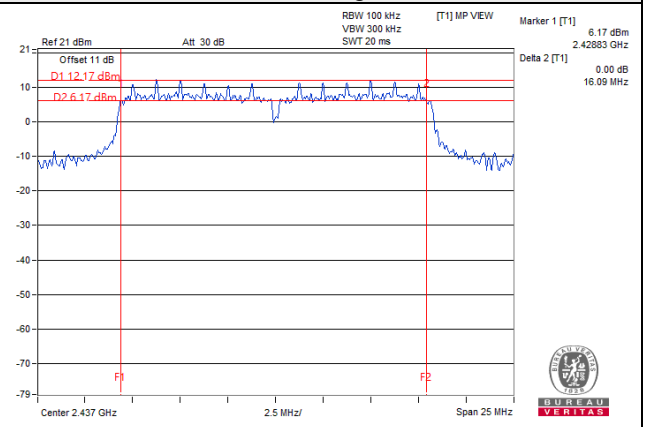
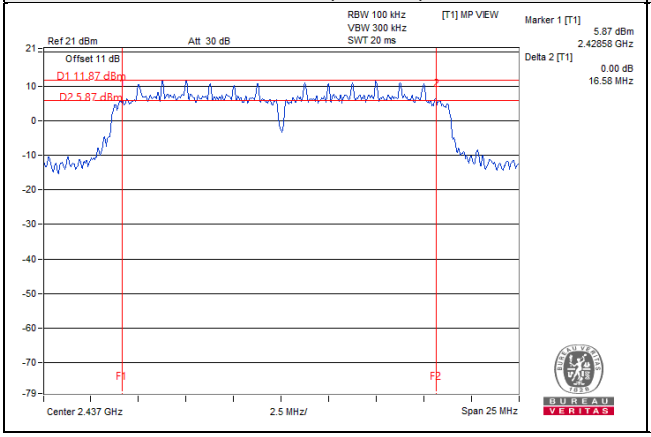
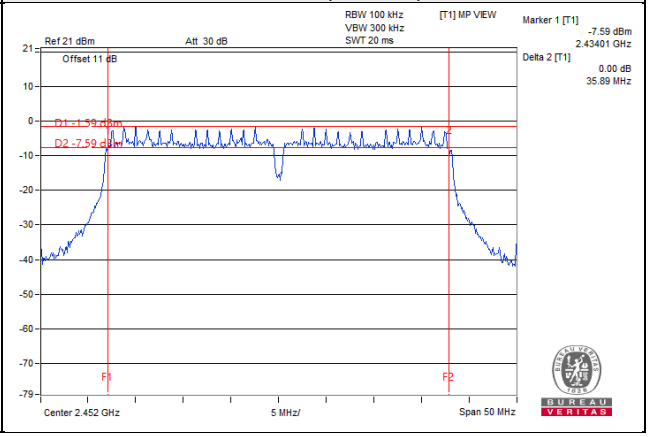
Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
1	2412	16.33	16.37	0.5	Pass
6	2437	16.09	16.37	0.5	Pass
11	2462	16.34	16.37	0.5	Pass

802.11n (VHT20)

Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
1	2412	16.77	16.76	0.5	Pass
6	2437	16.59	16.58	0.5	Pass
11	2462	16.75	16.75	0.5	Pass

802.11n (VHT40)

Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
3	2422	35.90	35.89	0.5	Pass
6	2437	35.91	35.93	0.5	Pass
9	2452	35.89	35.92	0.5	Pass

Spectrum Plot of Worst Value	
802.11b	802.11g
	
802.11n (VHT20)	802.11n (VHT40)
	

4.4 Conducted Output Power Measurement

4.4.1 Limits of Conducted Output Power Measurement

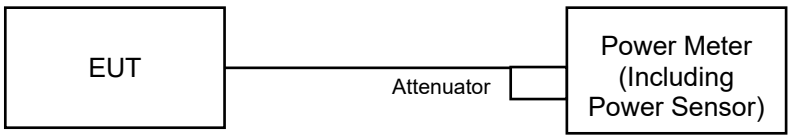
For systems using digital modulation in the 2400–2483.5 MHz bands: 1 Watt (30dBm)

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 ≥ 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

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	20.61	20.92	238.675	23.78	30.00	Pass
6	2437	21.36	21.22	269.207	24.30	30.00	Pass
11	2462	20.57	20.34	222.168	23.47	30.00	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	22.83	22.61	374.256	25.73	30.00	Pass
6	2437	23.58	23.34	**443.809**	26.47	30.00	Pass
11	2462	22.55	21.96	336.923	25.28	30.00	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	21.48	21.31	275.812	24.41	30.00	Pass
6	2437	23.12	23.02	405.563	26.08	30.00	Pass
10	2457	23.34	22.79	405.882	26.08	30.00	Pass
11	2462	19.08	18.92	158.893	22.01	30.00	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	21.81	21.52	293.611	24.68	30.00	Pass
6	2437	21.68	21.23	279.971	24.47	30.00	Pass
8	2447	20.58	20.50	226.490	23.55	30.00	Pass
9	2452	18.15	17.94	127.543	21.06	30.00	Pass

802.11n (VHT20)

Channel	Frequency (MHz)	Peak Power (dBm))		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
1	2412	21.57	21.36	280.322	24.48	30.00	Pass
6	2437	23.34	23.05	417.611	26.21	30.00	Pass
10	2457	23.47	22.93	418.667	26.22	30.00	Pass
11	2462	19.15	18.97	161.110	22.07	30.00	Pass

802.11n (VHT40)

Channel	Frequency (MHz)	Peak Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
3	2422	21.68	21.30	282.128	24.50	30.00	Pass
6	2437	21.77	21.32	285.833	24.56	30.00	Pass
8	2447	20.62	20.53	228.325	23.59	30.00	Pass
9	2452	18.23	17.98	129.333	21.12	30.00	Pass

Average Power

802.11b

Channel	Frequency (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)
		Chain 0	Chain 1		
1	2412	17.98	18.16	128.269	21.08
6	2437	18.89	18.44	147.269	21.68
11	2462	17.83	17.67	119.153	20.76

802.11g

Channel	Frequency (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)
		Chain 0	Chain 1		
1	2412	18.34	17.53	124.858	20.96
6	2437	18.71	18.49	144.934	21.61
11	2462	14.54	14.31	55.422	17.44

802.11n (HT20)

Channel	Frequency (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)
		Chain 0	Chain 1		
1	2412	16.42	16.28	86.315	19.36
6	2437	18.67	18.49	144.252	21.59
10	2457	18.32	18.08	132.189	21.21
11	2462	14.05	13.97	50.356	17.02

802.11n (HT40)

Channel	Frequency (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)
		Chain 0	Chain 1		
3	2422	14.05	14.01	50.586	17.04
6	2437	14.27	13.91	51.334	17.10
8	2447	11.86	11.25	28.681	14.58
9	2452	10.26	10.07	20.779	13.18

802.11n (VHT20)

Channel	Frequency (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)
		Chain 0	Chain 1		
1	2412	16.47	16.32	87.216	19.41
6	2437	18.73	18.54	146.095	21.65
10	2457	18.36	18.13	133.562	21.26
11	2462	14.12	14.03	51.116	17.09

802.11n (VHT40)

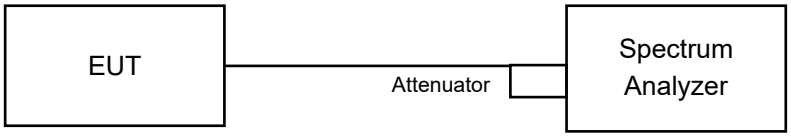
Channel	Frequency (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)
		Chain 0	Chain 1		
3	2422	14.11	14.06	51.232	17.10
6	2437	14.31	13.96	51.866	17.15
8	2447	11.91	11.29	28.982	14.62
9	2452	10.34	10.17	21.214	13.27

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 band during any time interval of continuous transmission.

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 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.

4.5.5 Deviation from Test Standard

No deviation.

4.5.6 EUT Operating Condition

Same as item 4.3.6.

4.5.7 Test Results

802.11b

TX chain	Channel	Frequency (MHz)	PSD (dBm/3kHz)	10 log (N=2) dB	Total PSD (dBm/3kHz)	Limit (dBm/3kHz)	Pass / Fail
0	1	2412	-12.95	3.01	-9.94	8.00	Pass
	6	2437	-12.15	3.01	-9.14	8.00	Pass
	11	2462	-13.41	3.01	-10.40	8.00	Pass
1	1	2412	-11.62	3.01	-8.61	8.00	Pass
	6	2437	-11.80	3.01	-8.79	8.00	Pass
	11	2462	-12.23	3.01	-9.22	8.00	Pass

Note:
1. Method E) 2) c) of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. Directional gain = 2.07dBi + 10log(2) = 5.08dBi < 6dBi, so the power density limit is not reduced.

802.11g

TX chain	Channel	Frequency (MHz)	PSD (dBm/3kHz)	10 log (N=2) dB	Total PSD (dBm/3kHz)	Limit (dBm/3kHz)	Pass / Fail
0	1	2412	-6.48	3.01	-3.47	8.00	Pass
	6	2437	-2.75	3.01	0.26	8.00	Pass
	11	2462	-9.35	3.01	-6.34	8.00	Pass
1	1	2412	-6.62	3.01	-3.61	8.00	Pass
	6	2437	-3.47	3.01	-0.46	8.00	Pass
	11	2462	-9.10	3.01	-6.09	8.00	Pass

Note:
1. Method E) 2) c) of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. Directional gain = 2.07dBi + 10log(2) = 5.08dBi < 6dBi, so the power density limit is not reduced.

802.11n (VHT20)

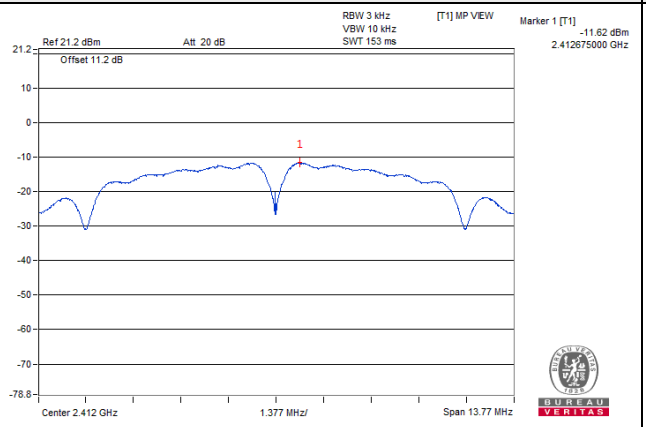
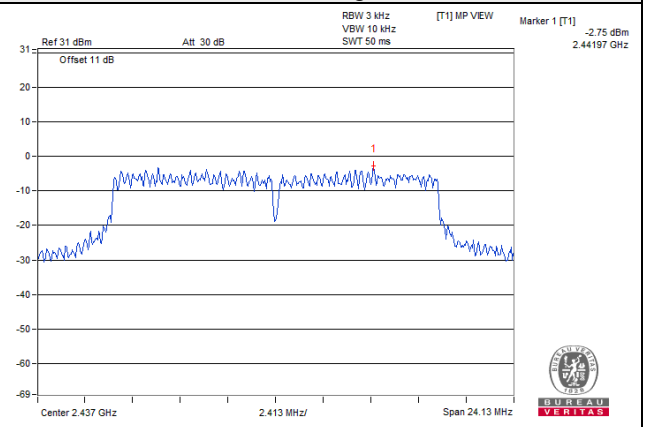
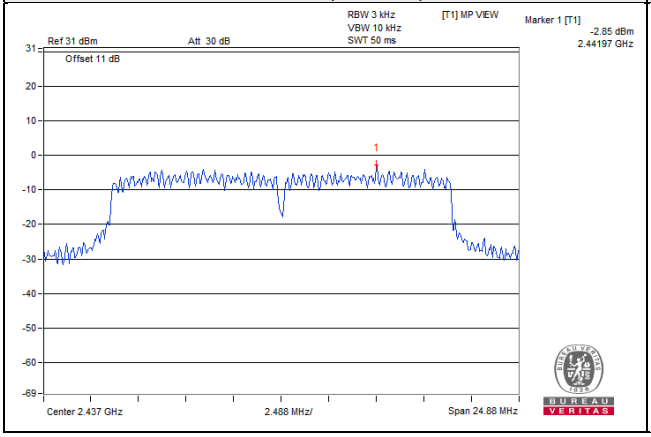
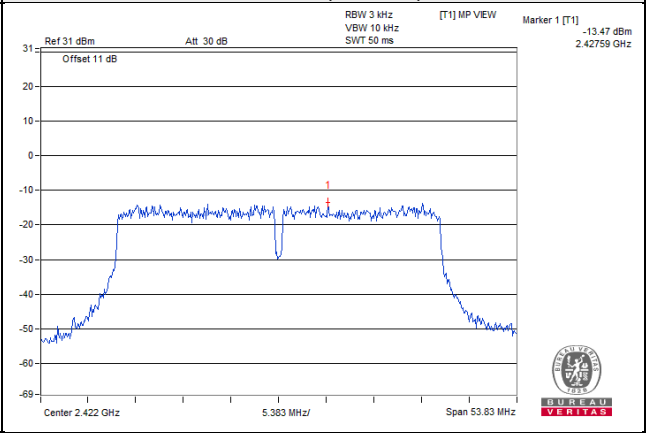
TX chain	Channel	Frequency (MHz)	PSD (dBm/3kHz)	10 log (N=2) dB	Total PSD (dBm/3kHz)	Limit (dBm/3kHz)	Pass / Fail
0	1	2412	-7.67	3.01	-4.66	8.00	Pass
	6	2437	-2.85	3.01	0.16	8.00	Pass
	11	2462	-10.08	3.01	-7.07	8.00	Pass
1	1	2412	-8.18	3.01	-5.17	8.00	Pass
	6	2437	-3.17	3.01	-0.16	8.00	Pass
	11	2462	-9.77	3.01	-6.76	8.00	Pass

Note:
1. Method E) 2) c) of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. Directional gain = 2.07dBi + 10log(2) = 5.08dBi < 6dBi, so the power density limit is not reduced.

802.11n (VHT40)

TX chain	Channel	Frequency (MHz)	PSD (dBm/3kHz)	10 log (N=2) dB	Total PSD (dBm/3kHz)	Limit (dBm/3kHz)	Pass / Fail
0	3	2422	-13.51	3.01	-10.50	8.00	Pass
	6	2437	-14.08	3.01	-11.07	8.00	Pass
	9	2452	-17.07	3.01	-14.06	8.00	Pass
1	3	2422	-13.47	3.01	-10.46	8.00	Pass
	6	2437	-13.91	3.01	-10.90	8.00	Pass
	9	2452	-17.13	3.01	-14.12	8.00	Pass

Note:
1. Method E) 2) c) of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. Directional gain = 2.07dBi + 10log(2) = 5.08dBi < 6dBi, so the power density limit is not reduced.

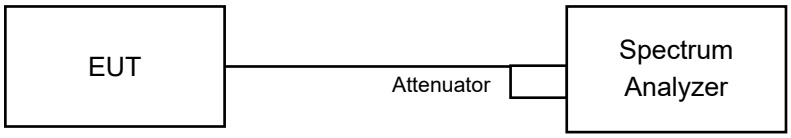
Spectrum Plot of Worst Value	
802.11b	802.11g
	
802.11n (VHT20)	802.11n (VHT40)
	

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 ≥ 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.

4.6.5 Deviation from Test Standard

No deviation.

4.6.6 EUT Operating Condition

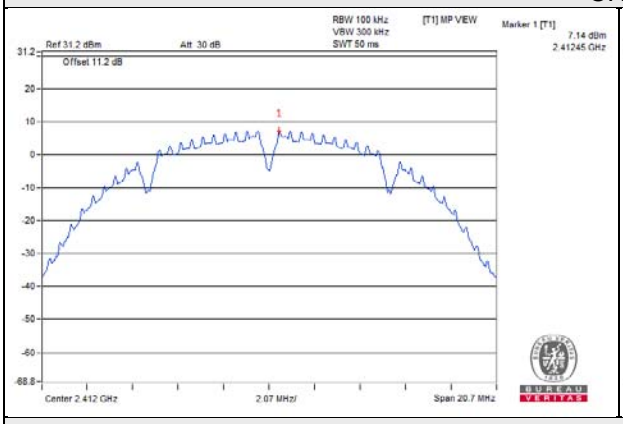
Same as item 4.3.6.

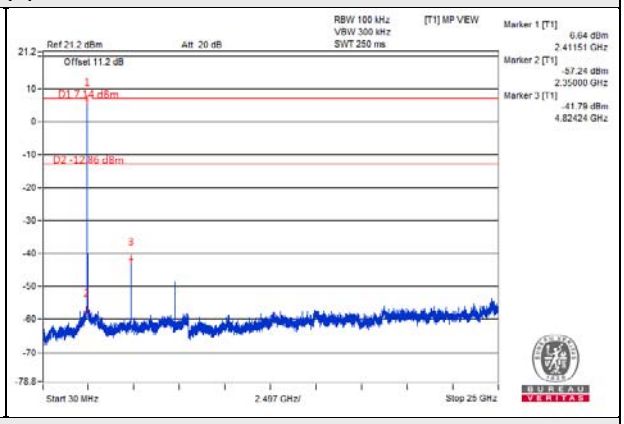
4.6.7 Test Results

The conducted emission test is performed on each TX port of operating mode without summing or adding 10log (N) since the limit is relative emission limit.
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.

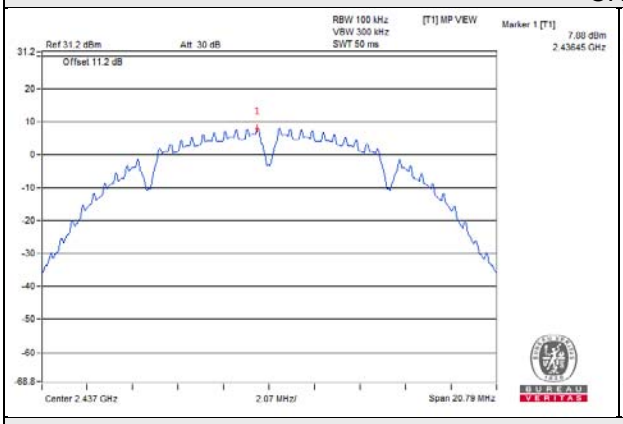
802.11b_Chain 0

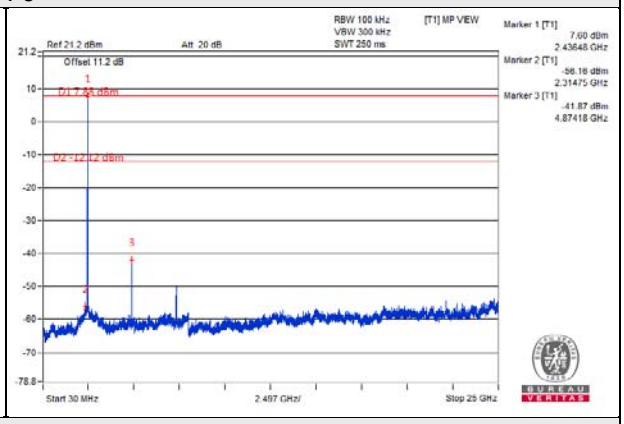
CH 1



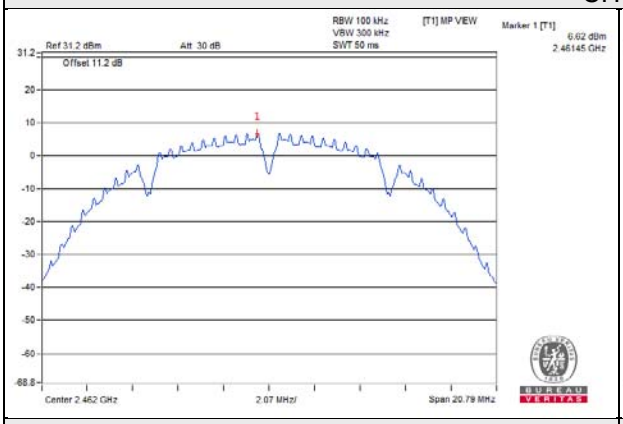


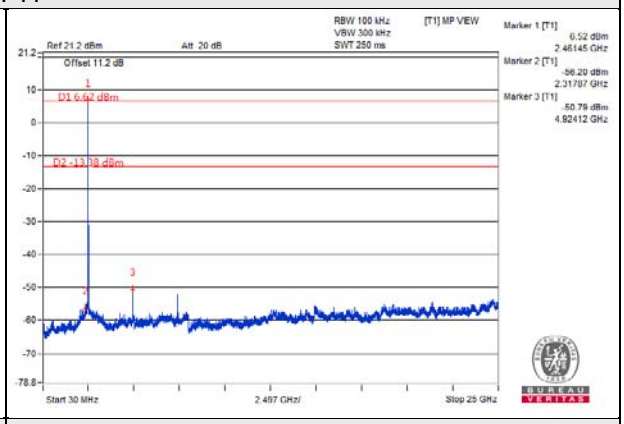
CH 6



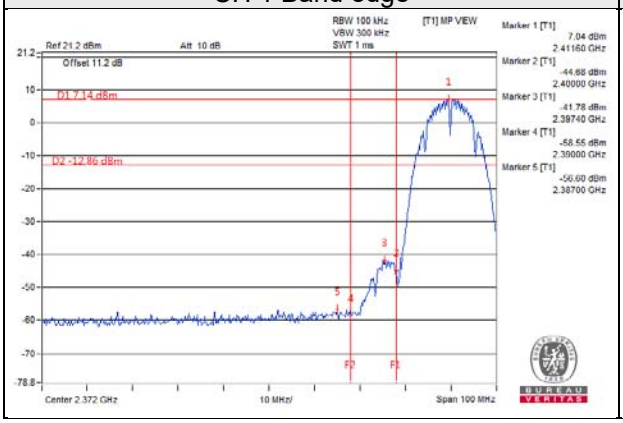


CH 11

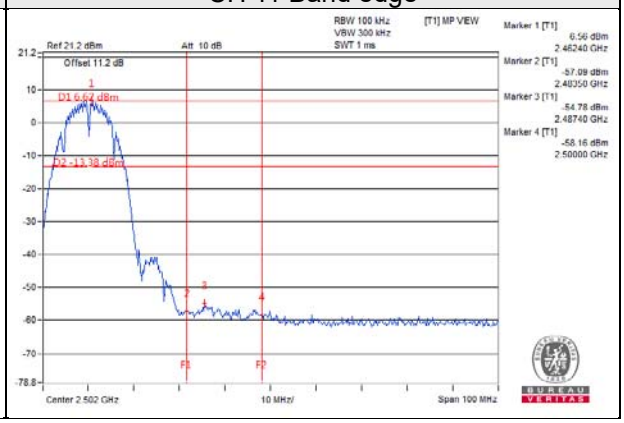




CH 1 Band edge

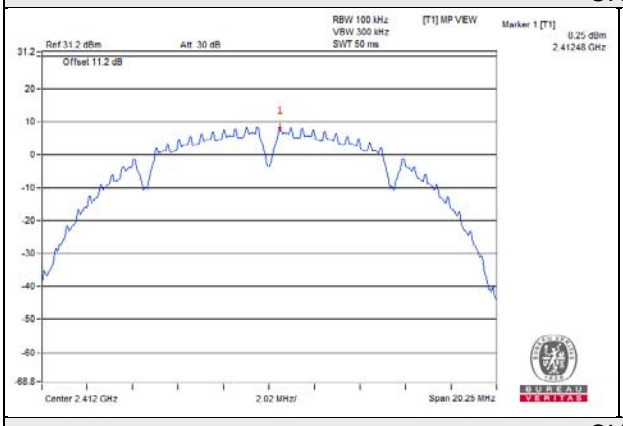


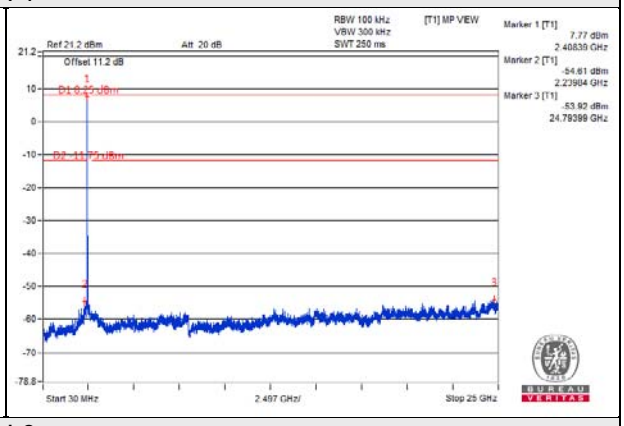
CH 11 Band edge



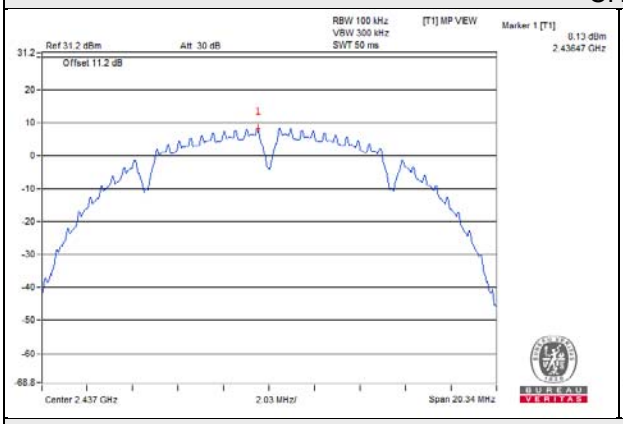
802.11b_Chain 1

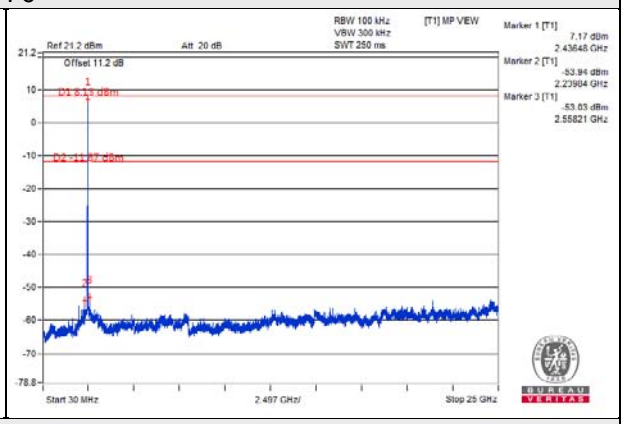
CH 1



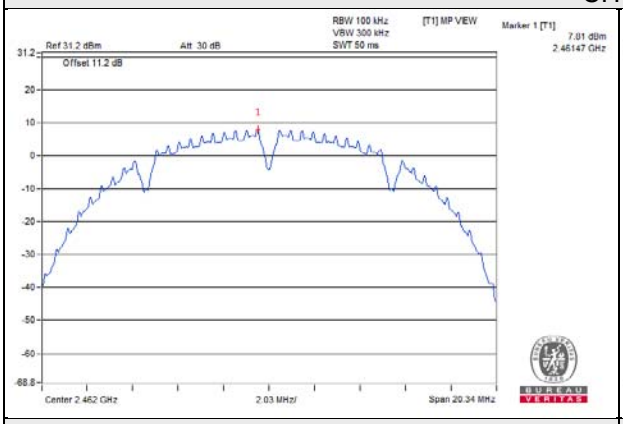


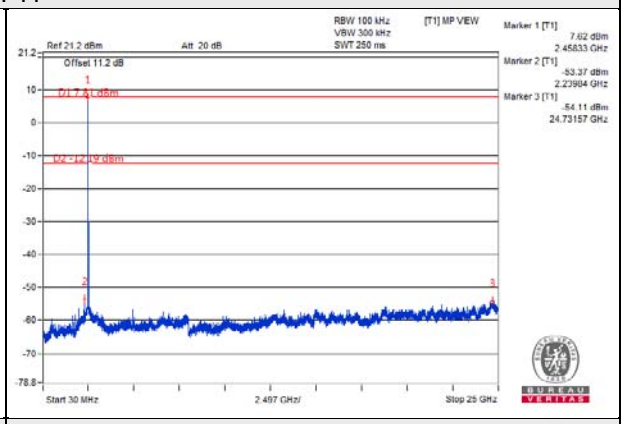
CH 6



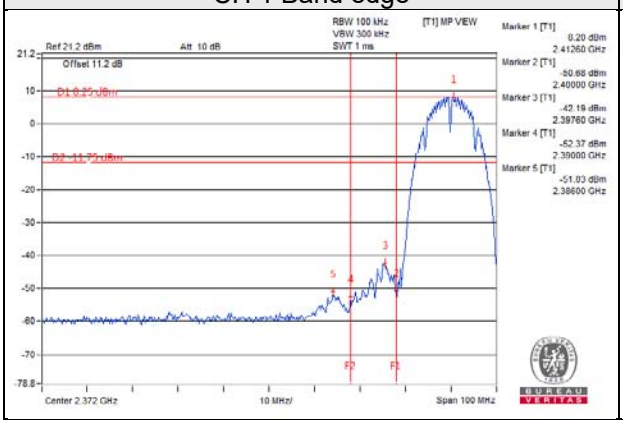


CH 11

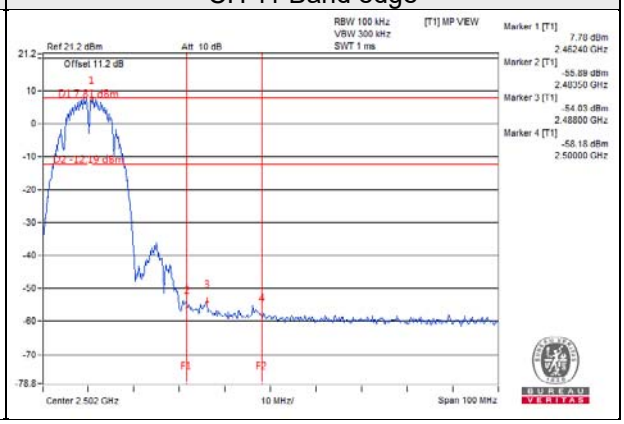




CH 1 Band edge

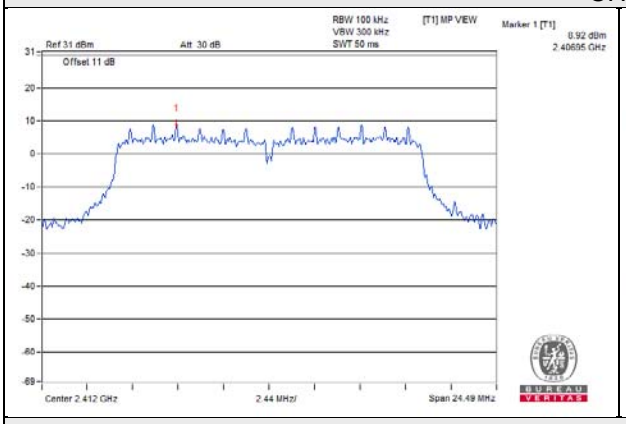


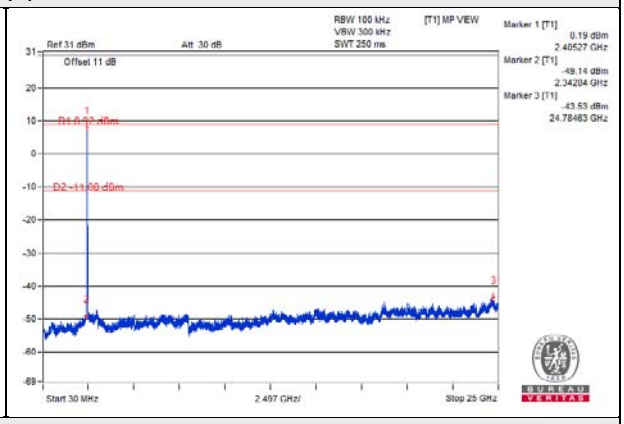
CH 11 Band edge



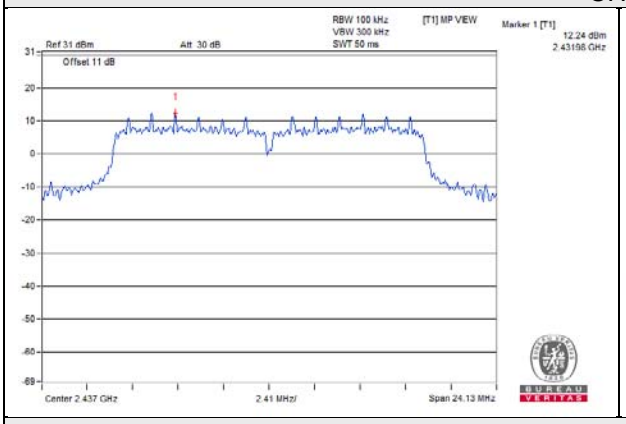
802.11g_Chain 0

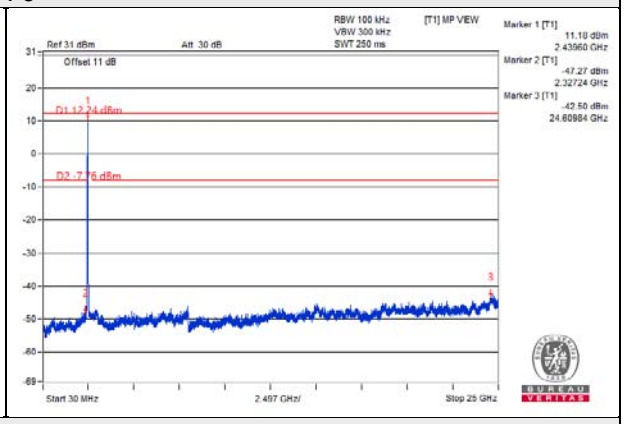
CH 1



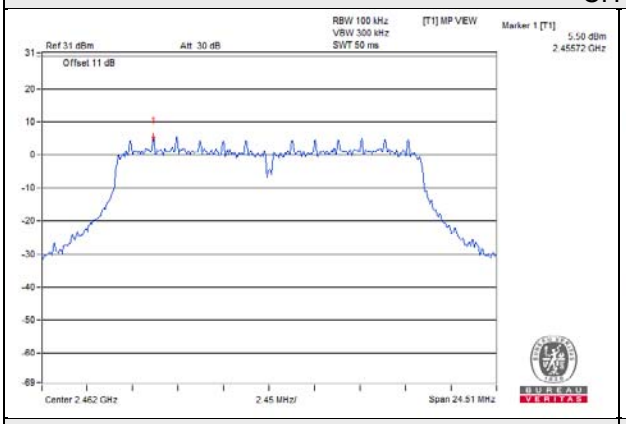


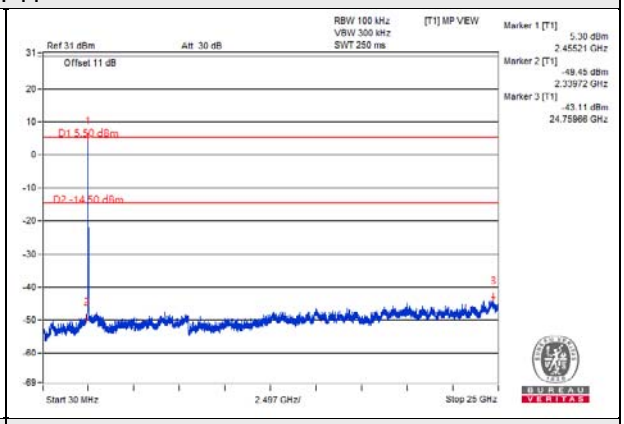
CH 6



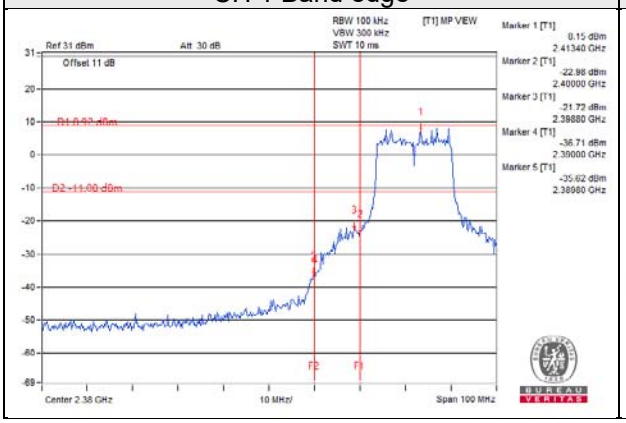


CH 11

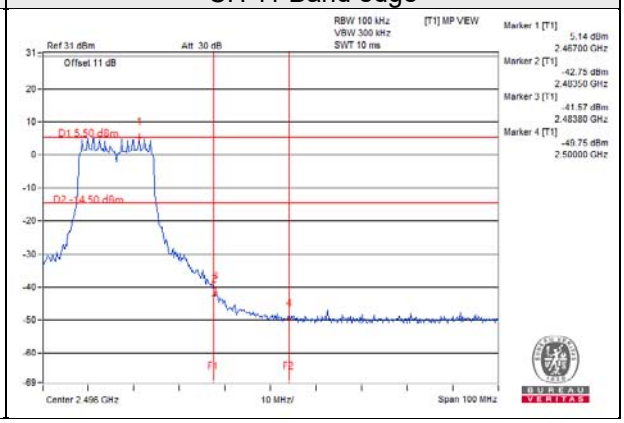




CH 1 Band edge

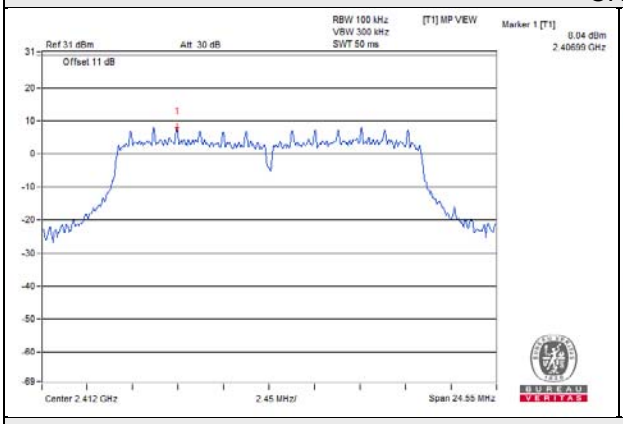


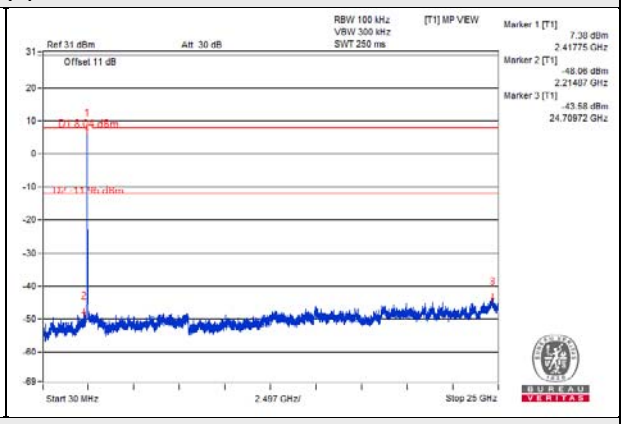
CH 11 Band edge



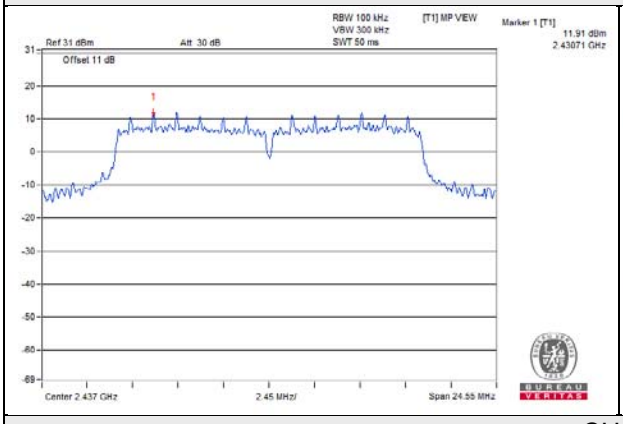
802.11g_Chain 1

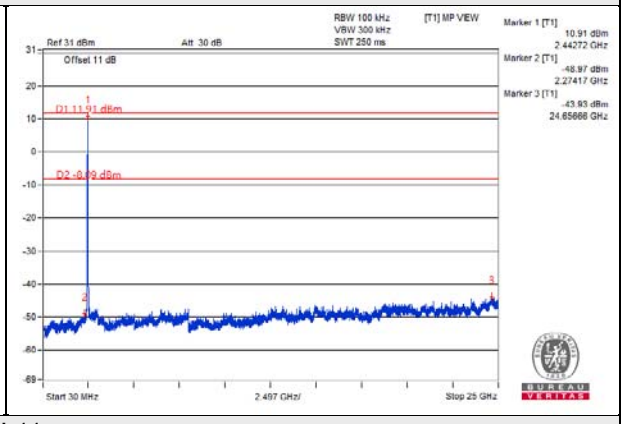
CH 1



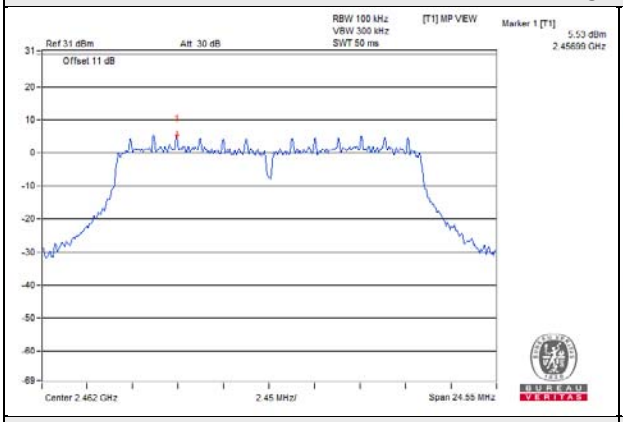


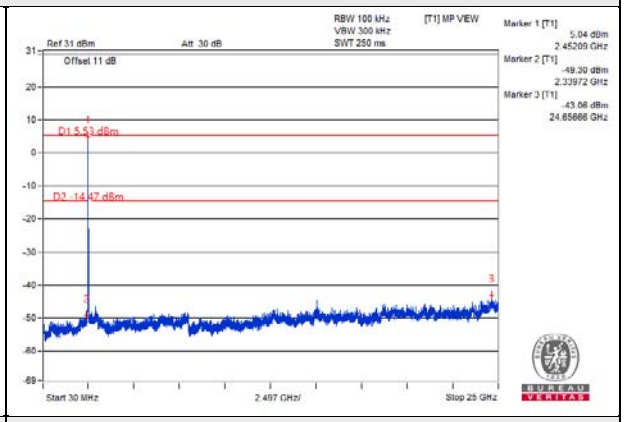
CH 6



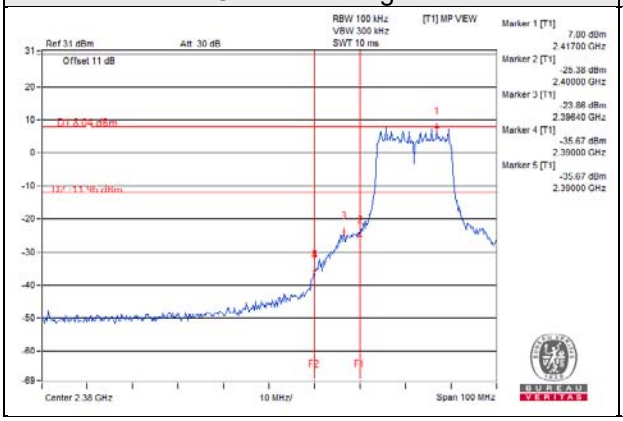


CH 11

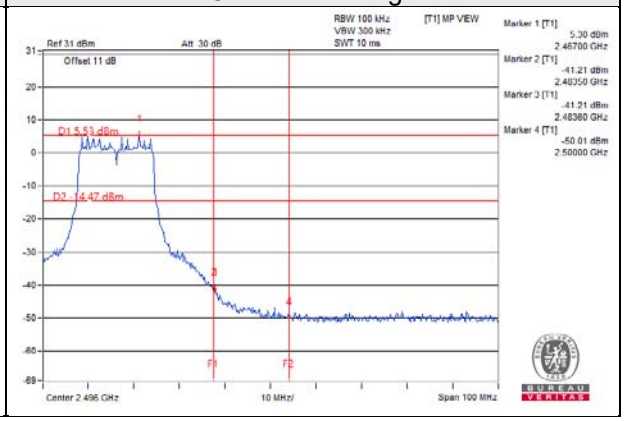




CH 1 Band edge

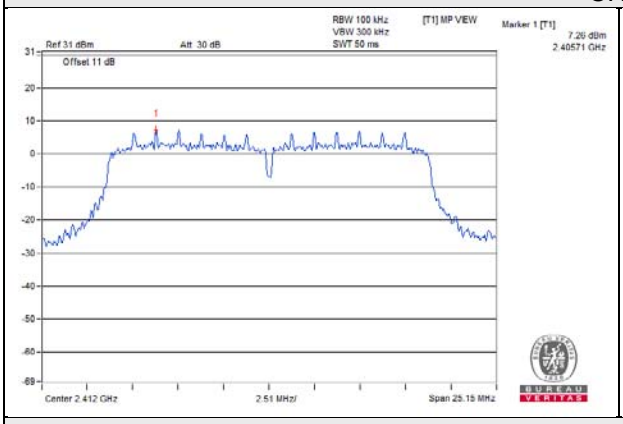


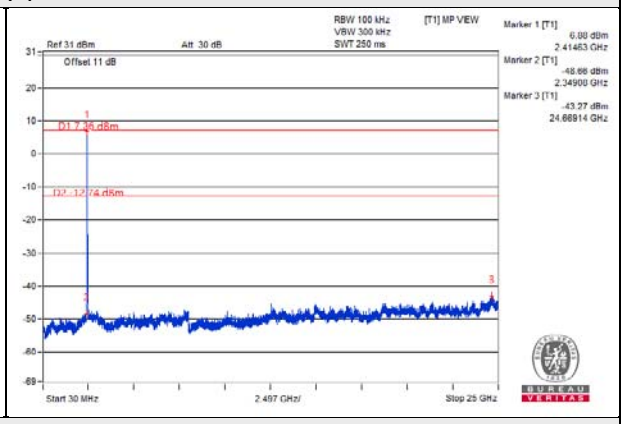
CH 11 Band edge



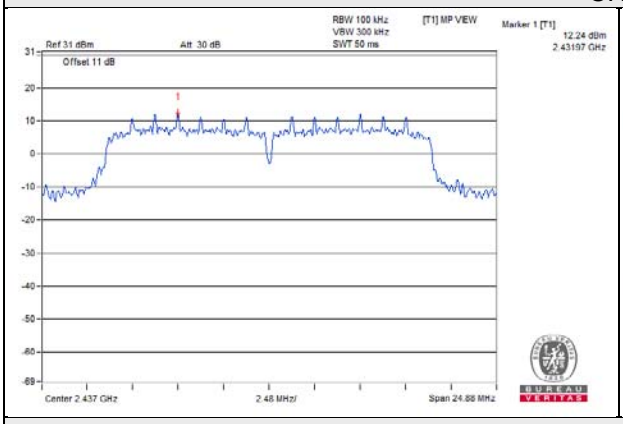
802.11n (VHT20)_Chain 0

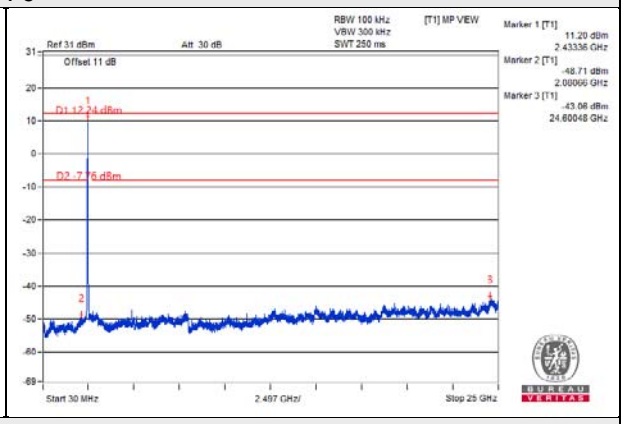
CH 1



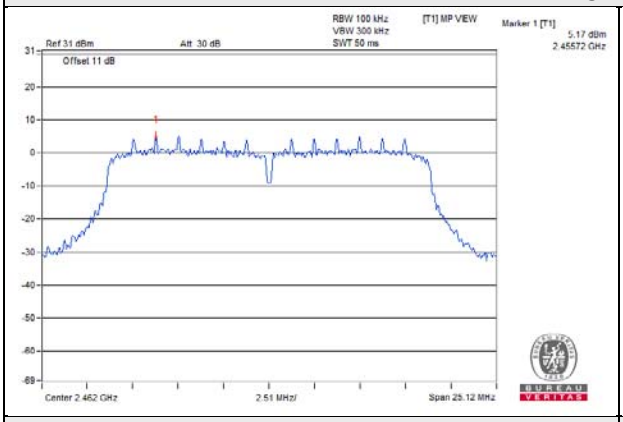


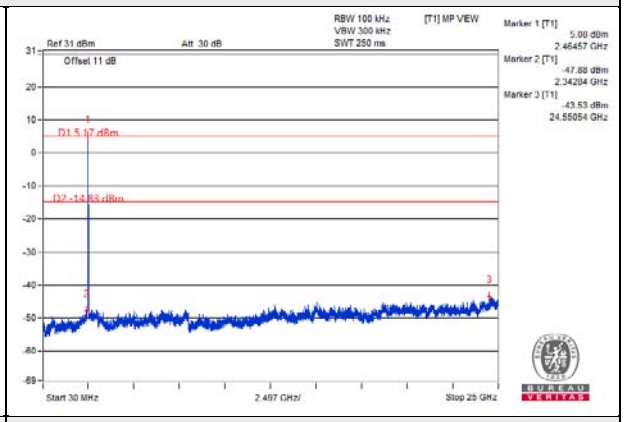
CH 6



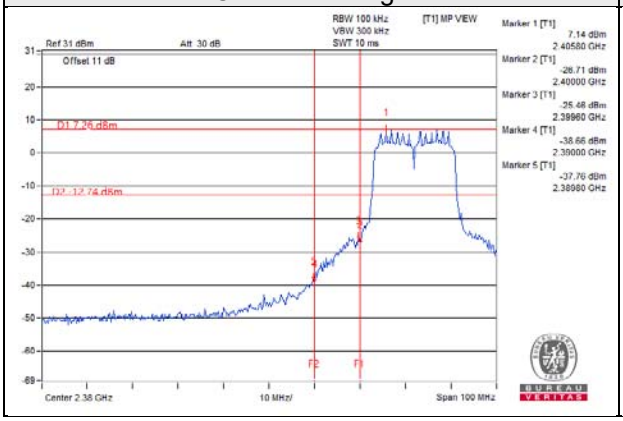


CH 11

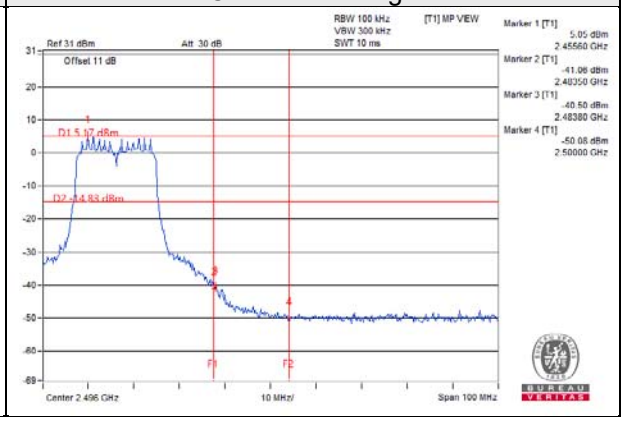




CH 1 Band edge

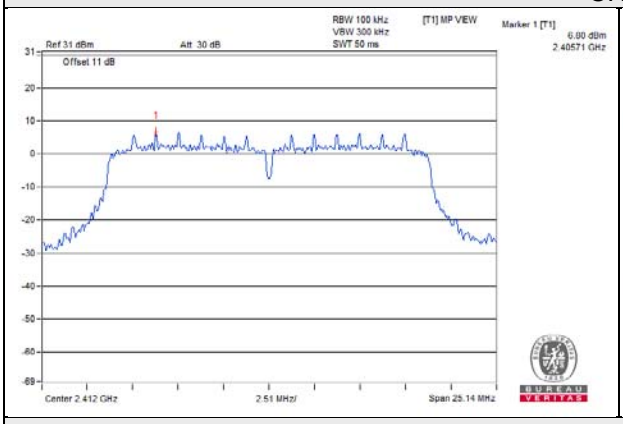


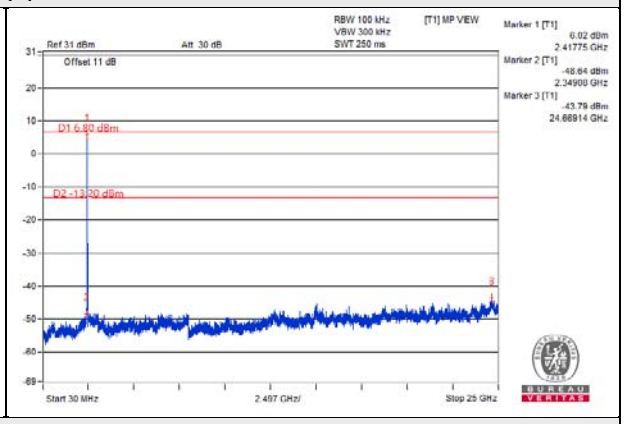
CH 11 Band edge



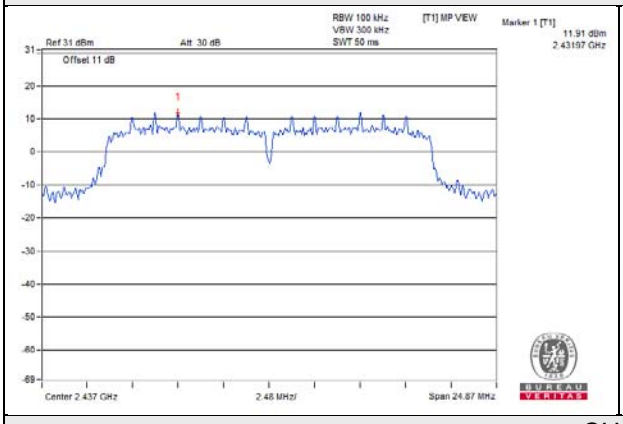
802.11n (VHT20)_Chain 1

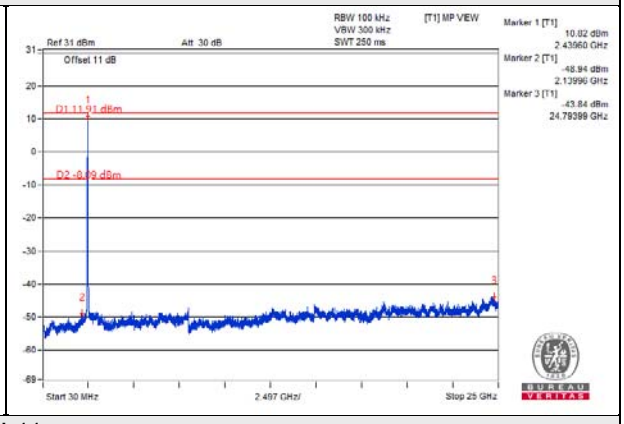
CH 1



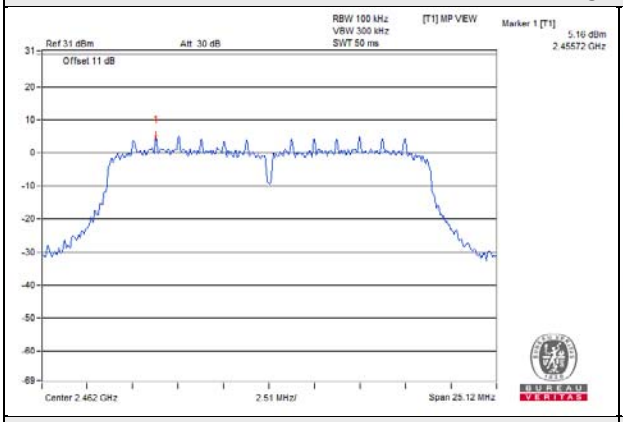


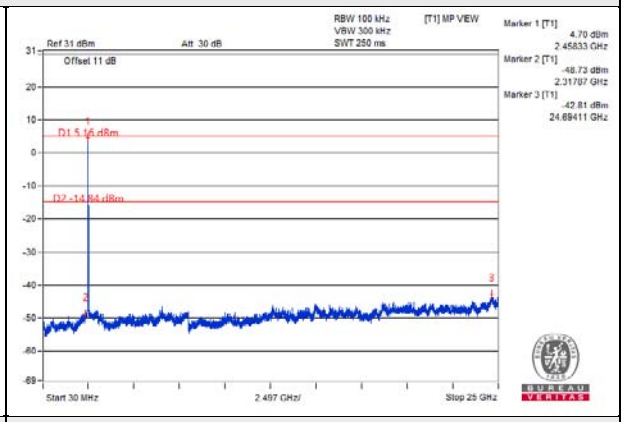
CH 6



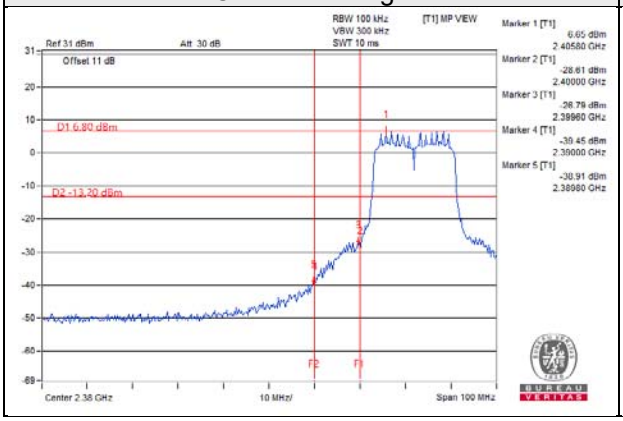


CH 11

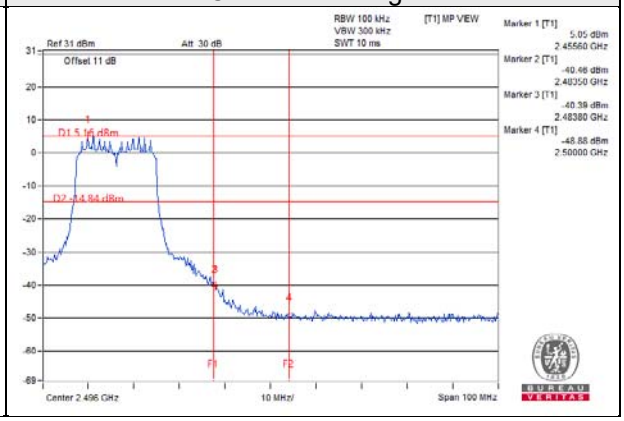




CH 1 Band edge

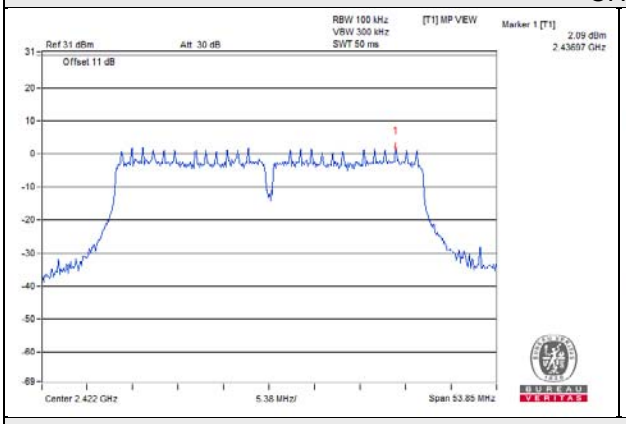


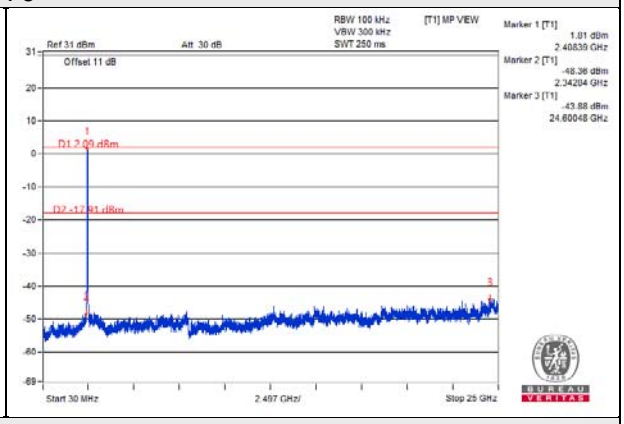
CH 11 Band edge



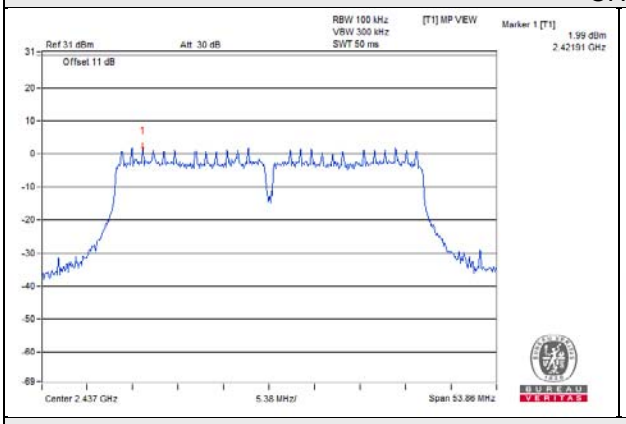
802.11n (VHT40)_Chain 0

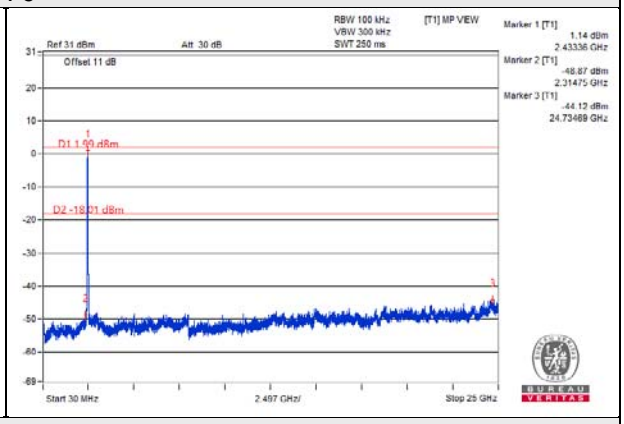
CH 3



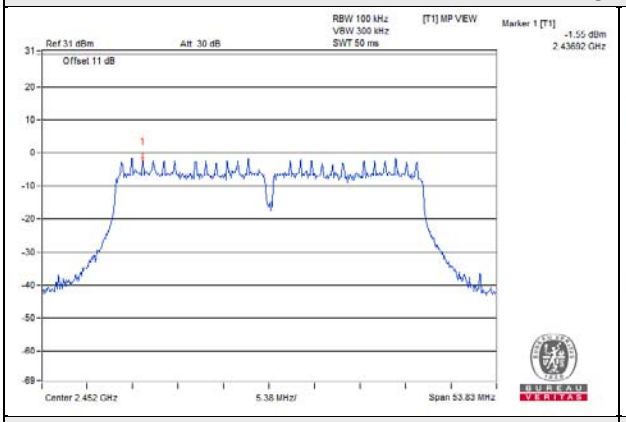


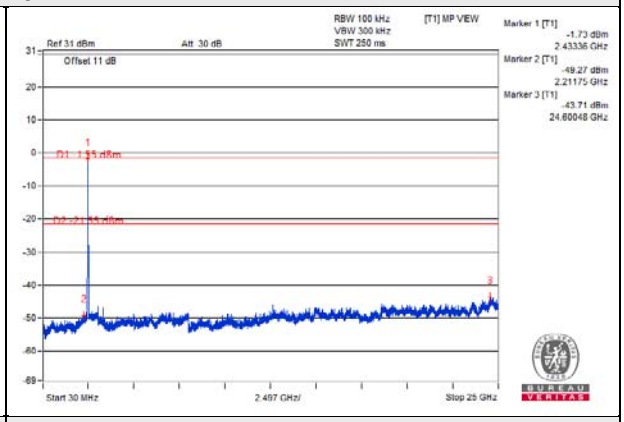
CH 6



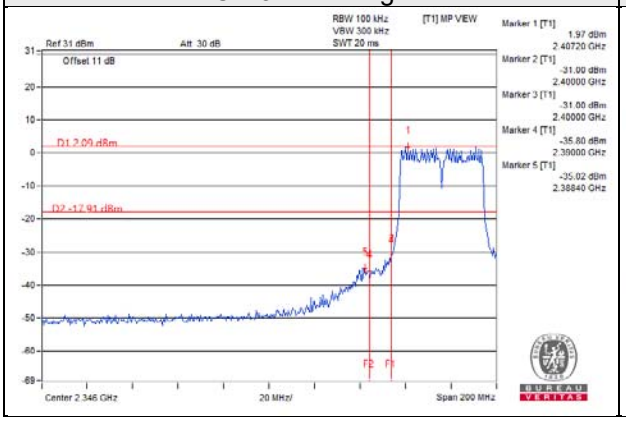


CH 9

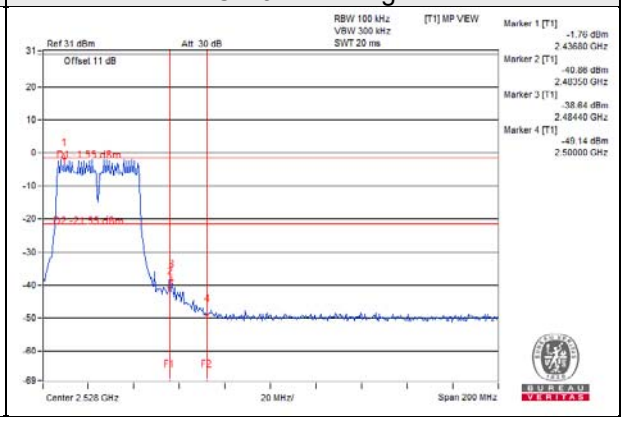




CH 3 Band edge

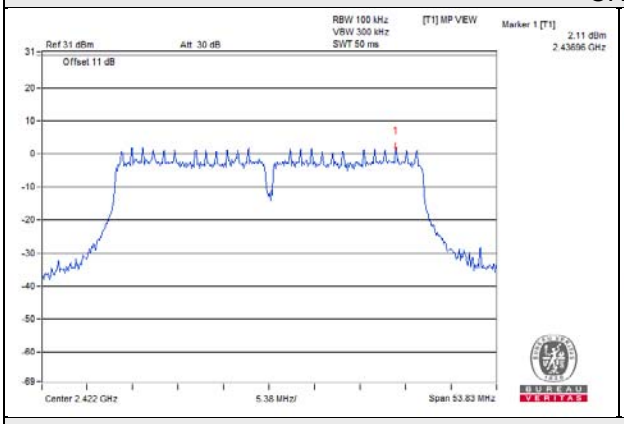


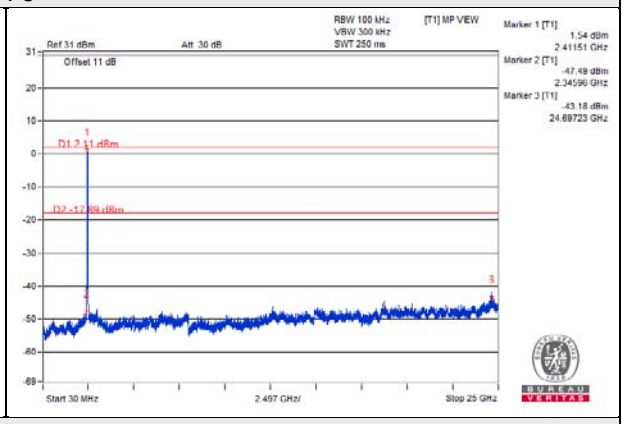
CH 9 Band edge



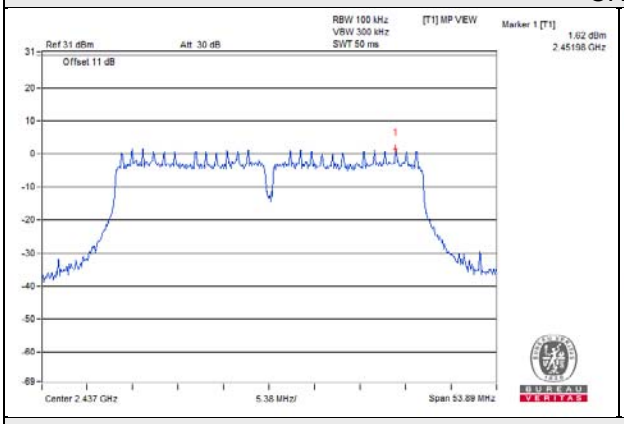
802.11n (VHT40)_Chain 1

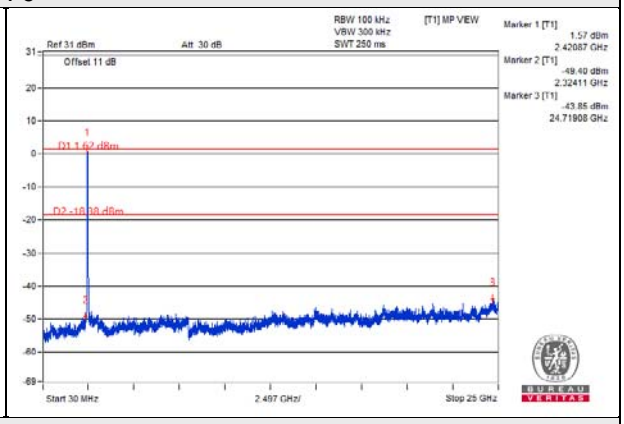
CH 3



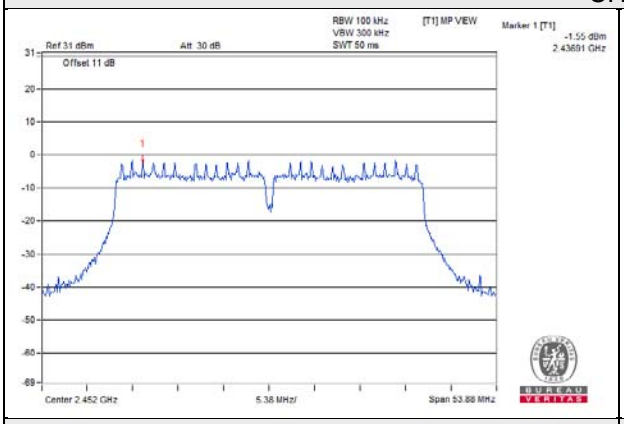


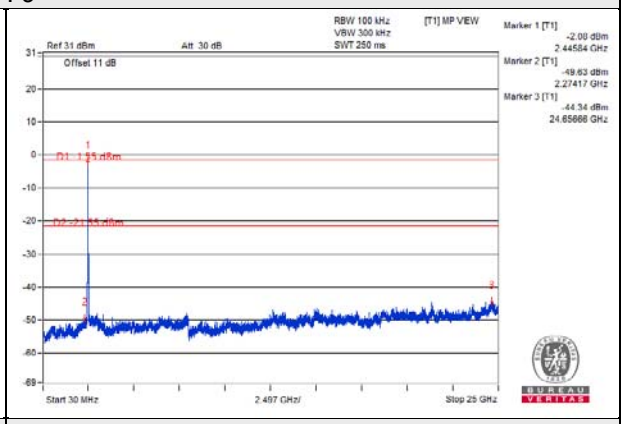
CH 6



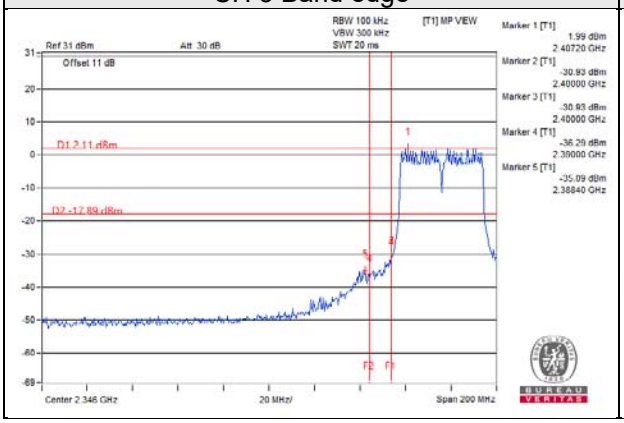


CH 9

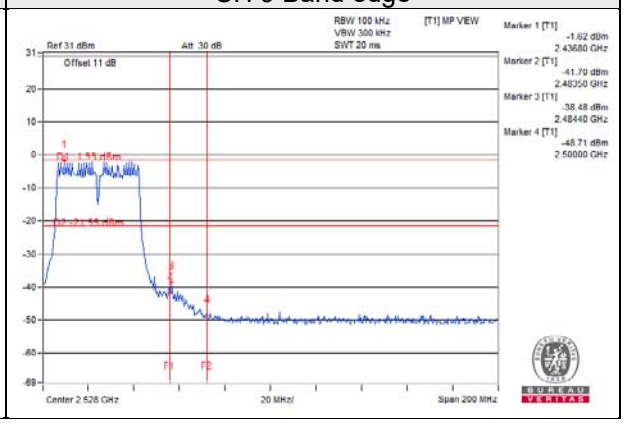




CH 3 Band edge



CH 9 Band edge



5 Pictures of Test Arrangements

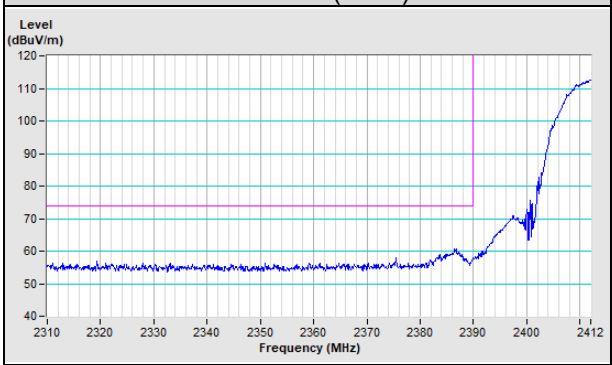
Please refer to the attached file (Test Setup Photo).

Annex A- Band Edge Measurement

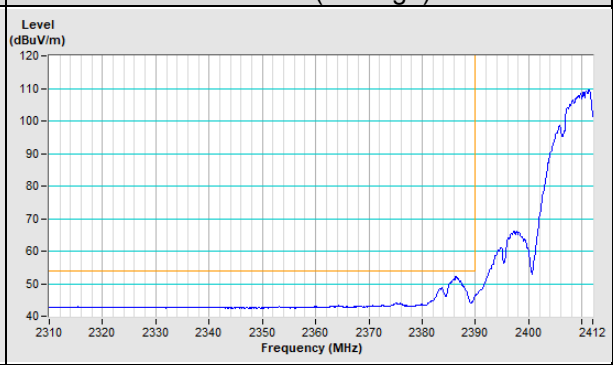
802.11b

Channel 1

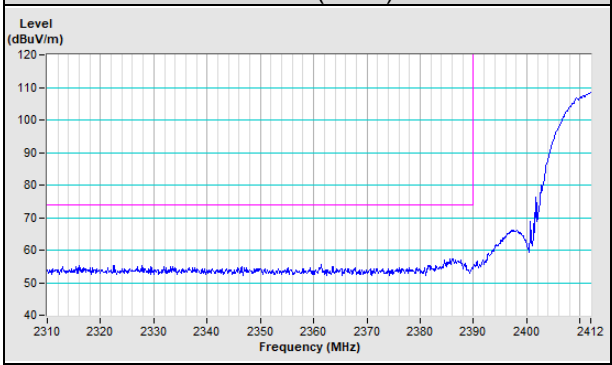
Horizontal (Peak)



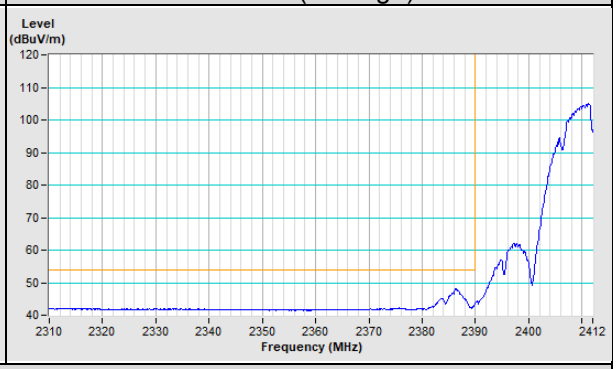
Horizontal (Average)



Vertical (Peak)

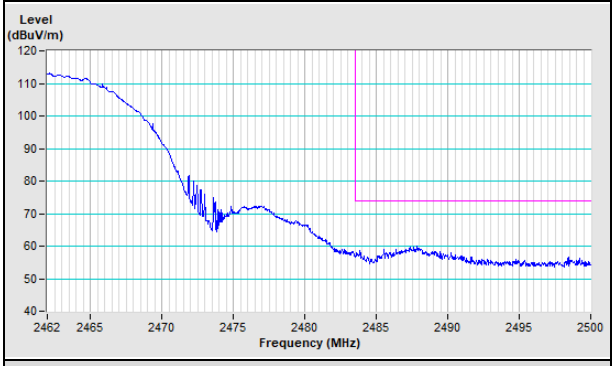


Vertical (Average)

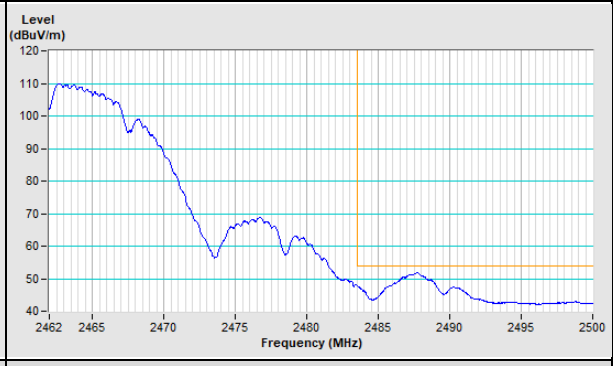


Channel 11

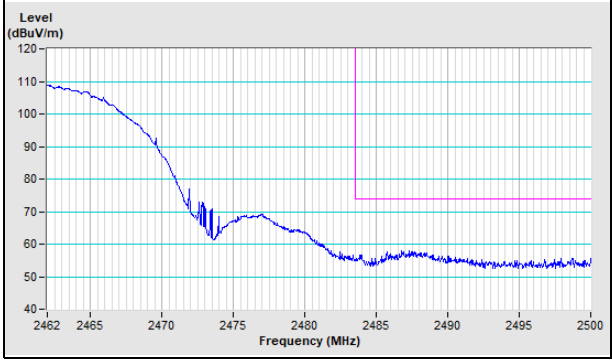
Horizontal (Peak)



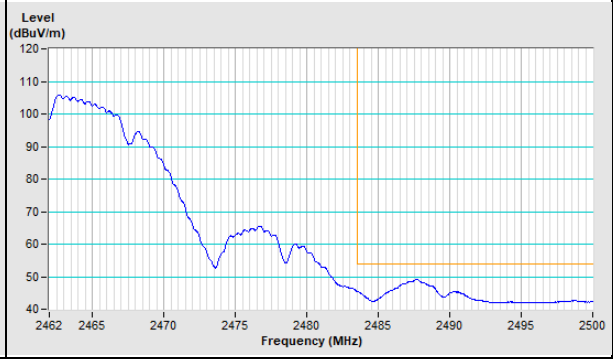
Horizontal (Average)



Vertical (Peak)



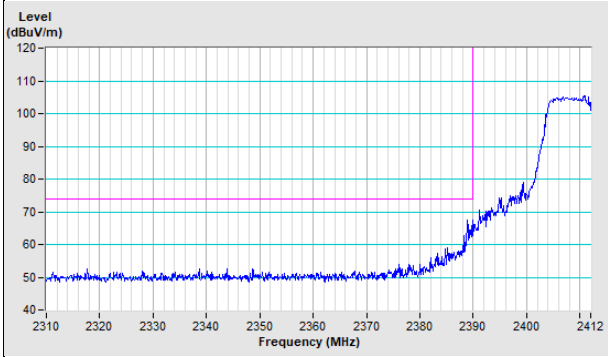
Vertical (Average)



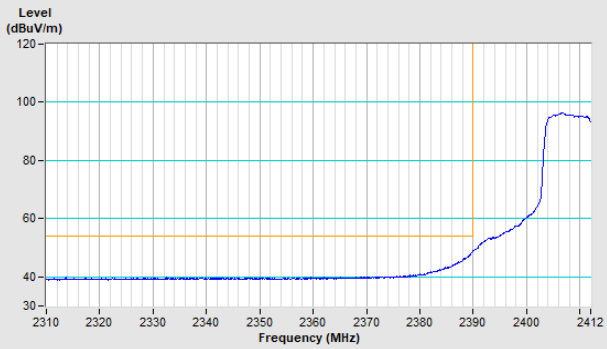
802.11g

Channel 1

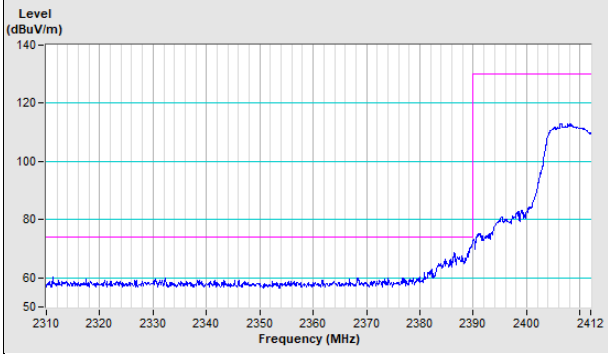
Horizontal (Peak)



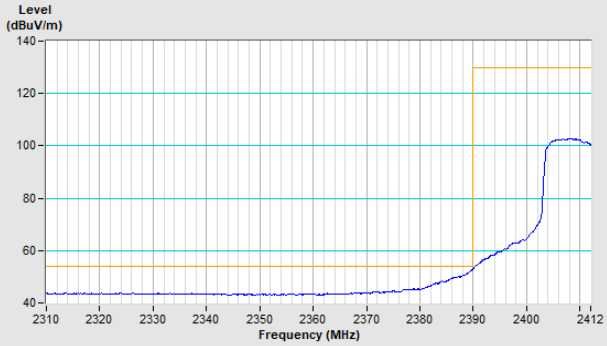
Horizontal (Average)



Vertical (Peak)

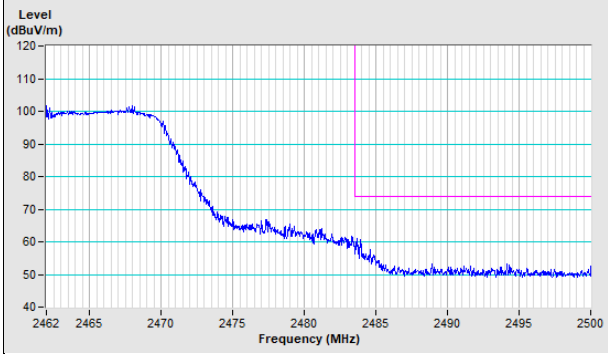


Vertical (Average)

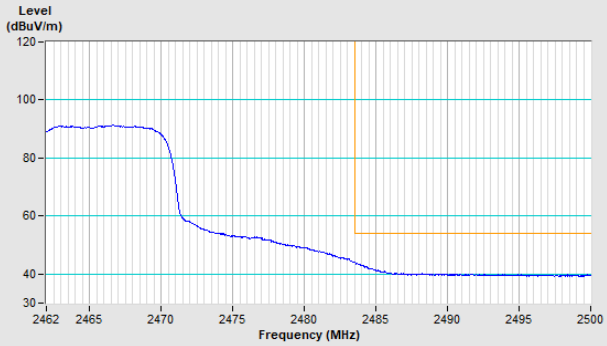


Channel 11

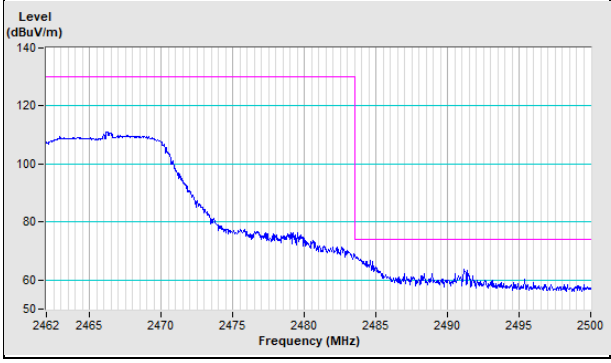
Horizontal (Peak)



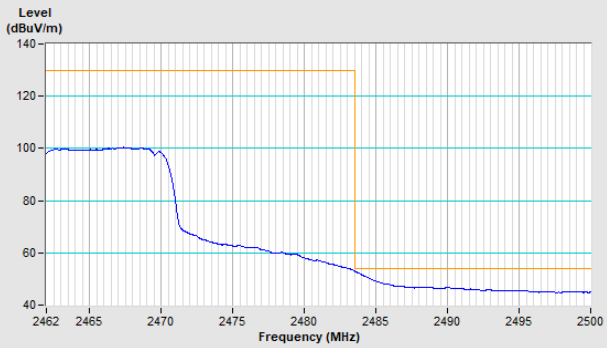
Horizontal (Average)



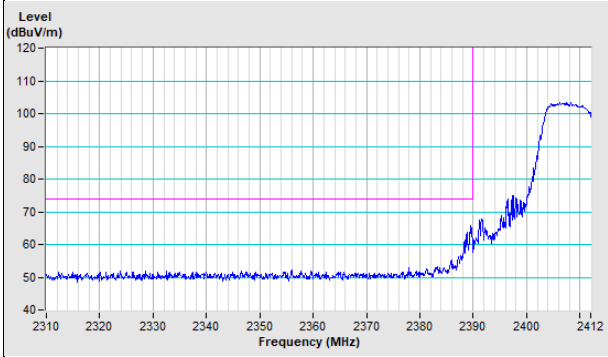
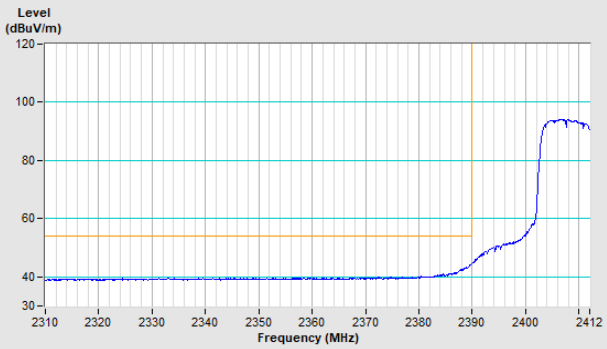
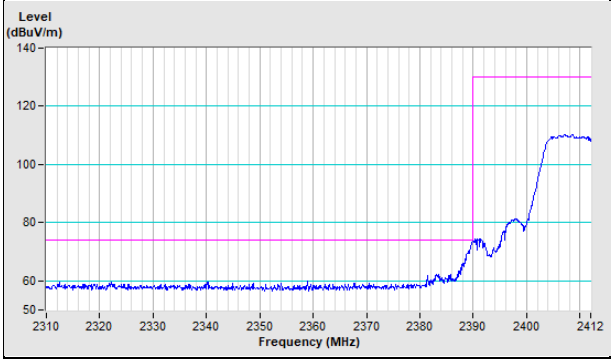
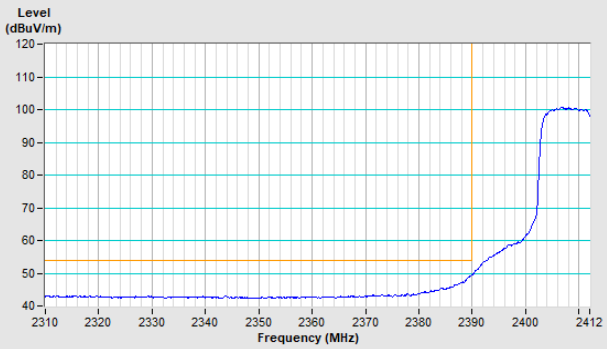
Vertical (Peak)

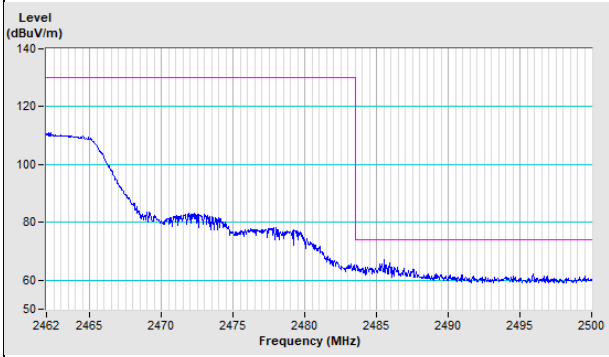
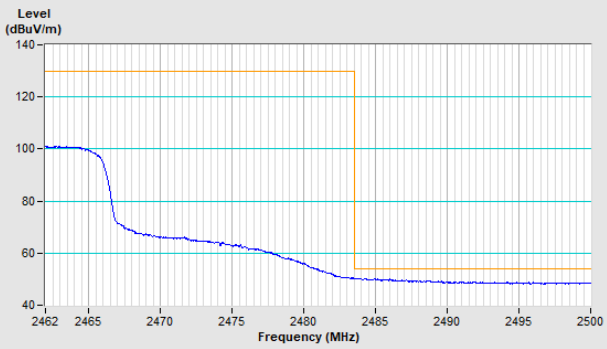
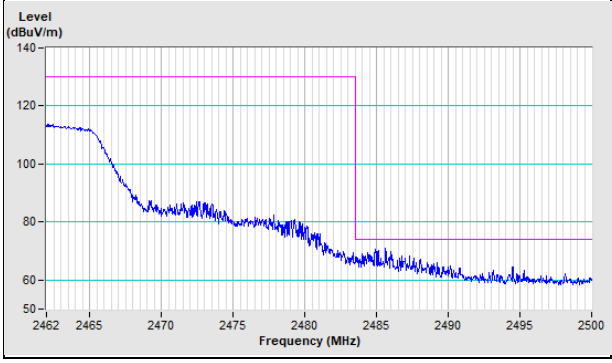
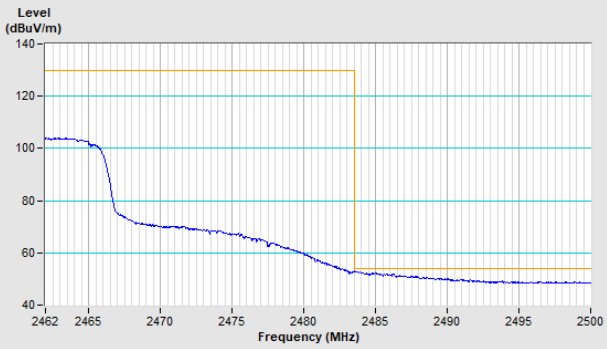


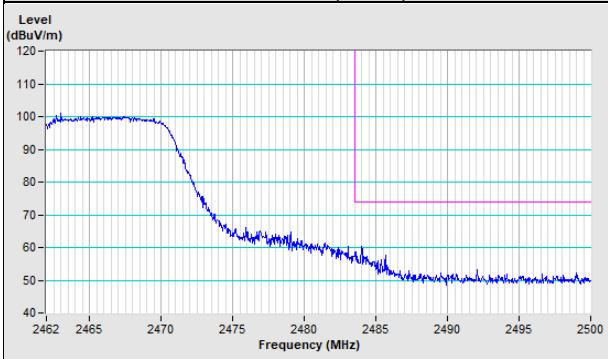
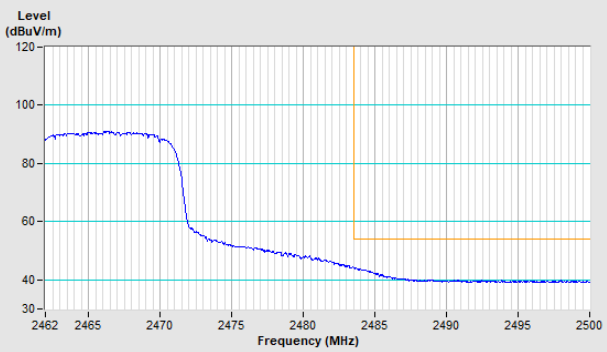
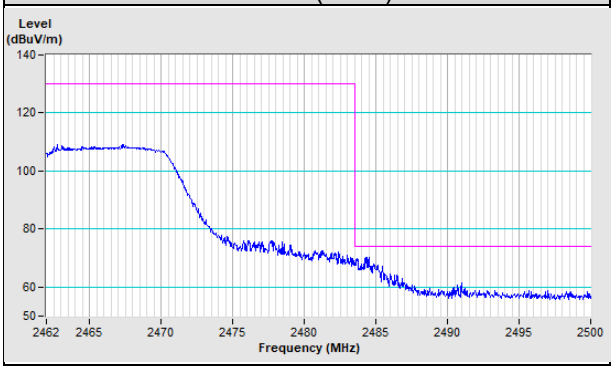
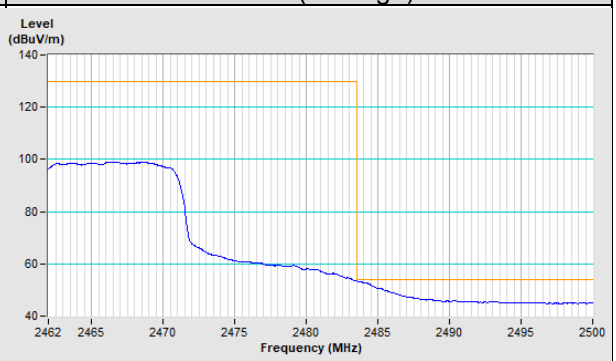
Vertical (Average)



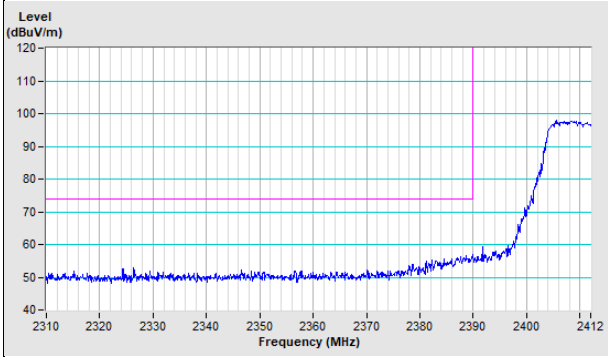
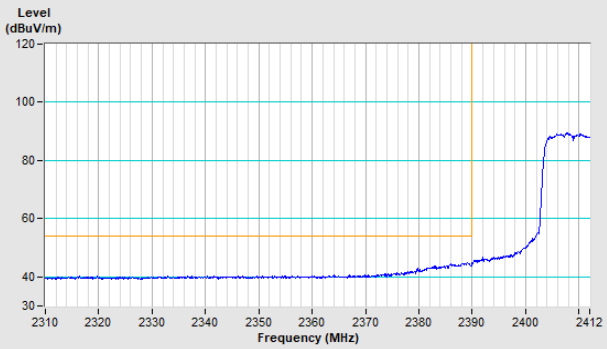
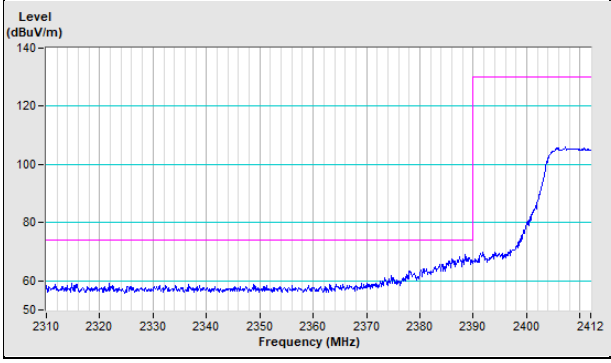
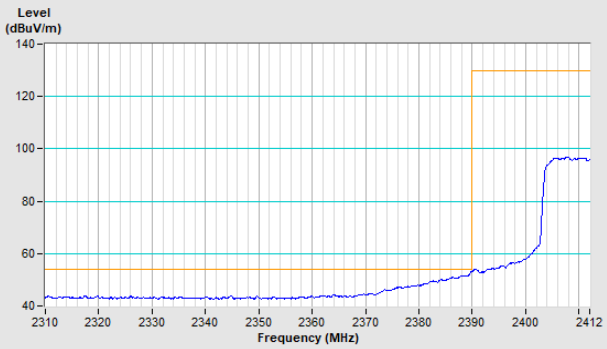
802.11n (VHT20)

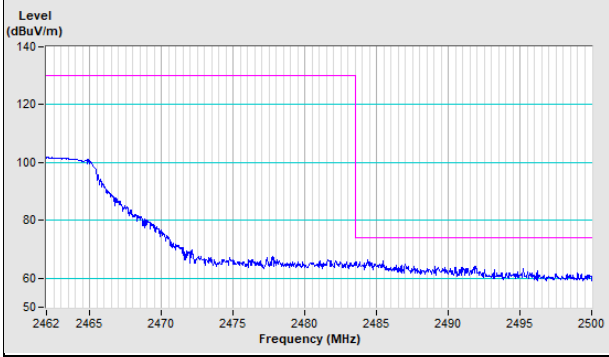
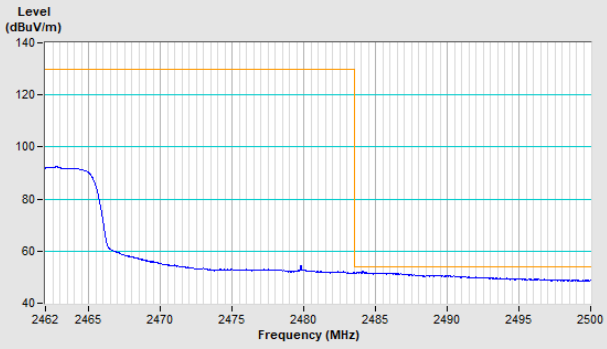
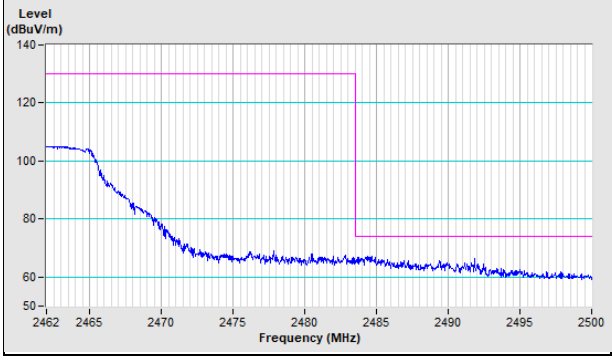
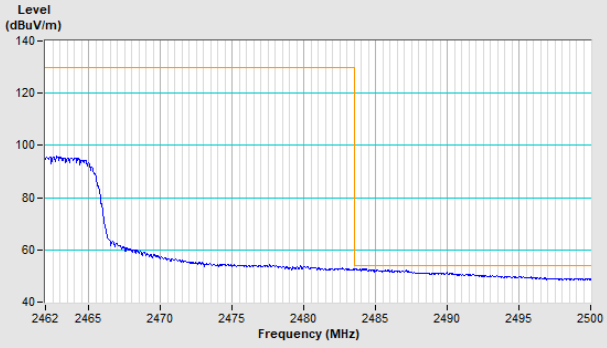
Channel 1	
Horizontal (Peak)	Horizontal (Average)
	
Vertical (Peak)	Vertical (Average)
	

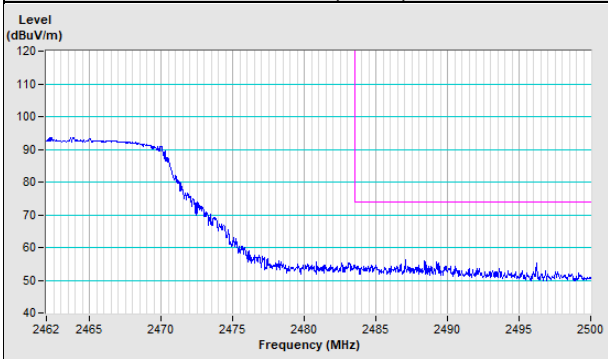
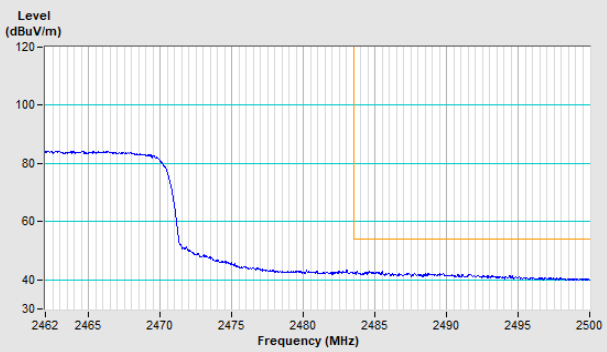
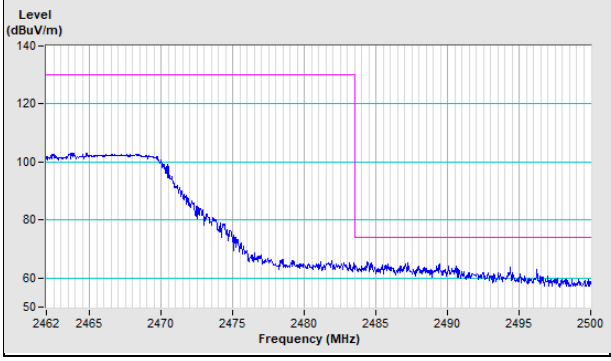
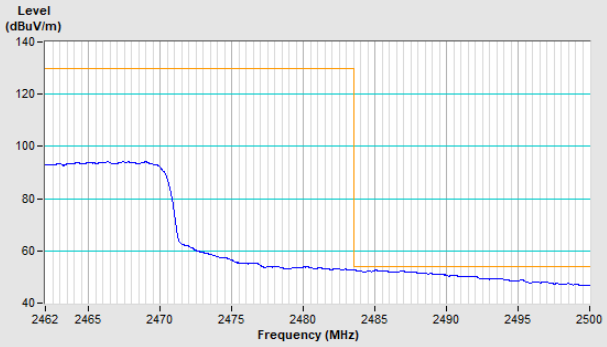
Channel 10	
Horizontal (Peak)	Horizontal (Average)
	
Vertical (Peak)	Vertical (Average)
	

Channel 11	
Horizontal (Peak)	Horizontal (Average)
	
Vertical (Peak)	Vertical (Average)
	

802.11n (VHT40)

Channel 3	
Horizontal (Peak)	Horizontal (Average)
	
Vertical (Peak)	Vertical (Average)
	

Channel 8	
Horizontal (Peak)	Horizontal (Average)
	
Vertical (Peak)	Vertical (Average)
	

Channel 9	
Horizontal (Peak)	Horizontal (Average)
	
Vertical (Peak)	Vertical (Average)
	

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 and approved according to ISO/IEC 17025.

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

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