

FCC Test Report

Report No.: RFBDUI-WTW-P20110877

FCC ID: KA2M15A1

Test Model: M15

Received Date: Feb. 25, 2021

Test Date: Mar. 09 ~ May 20, 2021

Issued Date: Jun. 29, 2021

Applicant: D-Link Corporation

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Issued By: Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch
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**FCC Registration /
Designation Number (1):** 788550 / TW0003

Test Location (2): B2F., No.215, Sec. 3, Beixin Rd., Xindian Dist., New Taipei City 231,
Taiwan

**FCC Registration /
Designation Number (2):** 427177 / TW0011



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Release Control Record

Issue No.	Description	Date Issued
RFBDUI-WTW-P20110877	Original Release	Jun. 29, 2021

1 Certificate of Conformity

Product: AX1500 Wi-Fi 6 AI Mesh Router, AX1500 Wi-Fi 6 AI Mesh System,
AX1500 Mesh Router, AX1500 Mesh System

Brand: D-Link

Test Model: M15

Sample Status: Engineering Sample

Applicant: D-Link Corporation

Test Date: Mar. 09 ~ May 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 : Pettie Chen, **Date:** Jun. 29, 2021
Pettie Chen / Senior Specialist

Approved by : Bruce Chen, **Date:** Jun. 29, 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 -16.42dB at 0.43152MHz.
15.205 / 15.209 / 15.247(d)	Radiated Emissions and Band Edge Measurement	Pass	Meet the requirement of limit. Minimum passing margin is -1.0dB 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	For Antenna 2G1, 5G1: Antenna connector is CCT MHF not a standard connector. For Antenna 2G2, 5G2: Antenna connector is KS-MHF not a standard connector.

Note:

- 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.
- 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	2.79 dB
Radiated Emissions up to 1 GHz	9kHz ~ 30MHz	2.44 dB
	30MHz ~ 200MHz	2.0153 dB
	200MHz ~ 1000MHz	2.0224 dB
Radiated Emissions above 1 GHz	1GHz ~ 18GHz	1.0121 dB
	18GHz ~ 40GHz	1.1508 dB

2.2 Modification Record

There were no modifications required for compliance.

3 General Information

3.1 General Description of EUT

Product	AX1500 Wi-Fi 6 AI Mesh Router, AX1500 Wi-Fi 6 AI Mesh System, AX1500 Mesh Router, AX1500 Mesh System
Brand	D-Link
Test Model	M15
Sample Status	Engineering Sample
Power Supply Rating	12Vdc from 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 (HT20/40): up to 300Mbps
Operating Frequency	2412 ~ 2462MHz
Number of Channel	802.11b, 802.11g, 802.11n (HT20): 11 802.11n (HT40): 7
Output Power	CDD Mode: 523.649mW Beamforming Mode: 212.939mW
Antenna Type	Refer to note
Antenna Connector	Refer to note
Accessory Device	Adapter
Cable Supplied	1.0m CAT5E 24AWG CCA WHITE CABLE (Brand: Nienyi, Model: NY4710 REV.0)

Note:

1. The following product names and model are provided to this EUT.

Product	Model	Description
AX1500 Wi-Fi 6 AI Mesh Router	M15	For marketing purpose.
AX1500 Wi-Fi 6 AI Mesh System		
AX1500 Mesh Router		
AX1500 Mesh System		

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

Modulation Mode	CDD Mode	Beamforming Mode	TX Function
802.11b	Support	Not Support	2TX
802.11g	Support	Not Support	2TX
802.11n (HT20)	Support	Support	2TX
802.11n (HT40)	Support	Support	2TX

* For 802.11n, CDD mode and Beamforming mode are presented in power output test item. For other test items, CDD mode is the worst case for final tests after pretesting.

* Scanning Radio is RX only.

3. The EUT consumes power from the following adapters.

Product	Brand	Model	Description
Adapter 1	Amigo	AMS159A-1201000F (US+UK)	I/P: 100-240 Vac, 50/60 Hz, 0.5 A O/P: 12 Vdc, 1 A
Adapter 2	Amigo	AMS159A-1201000F (EU+UK)	I/P: 100-240 Vac, 50/60 Hz, 0.5 A O/P: 12 Vdc, 1 A
Adapter 3	Amigo	AMS159A-1201000FU (US)	I/P: 100-240 Vac, 50/60 Hz, 0.5 A O/P: 12 Vdc, 1 A
Adapter 4	Amigo	AMS159A-1201000FS (AU)	I/P: 100-240 Vac, 50/60 Hz, 0.5 A O/P: 12 Vdc, 1 A
Adapter 5	Amigo	AMS159A-1201000FV (EU)	I/P: 100-240 Vac, 50/60 Hz, 0.5 A O/P: 12 Vdc, 1 A
Adapter 6	Amigo	AMS195-1201000FY (IN)	I/P: 100-240 Vac, 50/60 Hz, 0.5 A O/P: 12 Vdc, 1 A
Adapter 7	Amigo	AMS195-1201000FK (KR)	I/P: 100-240 Vac, 50/60 Hz, 0.5 A O/P: 12 Vdc, 1 A
Adapter 8	Amigo	AMS159A-1201000FX (BR)	I/P: 100-240 Vac, 50/60 Hz, 0.5 A O/P: 12 Vdc, 1 A
Adapter 9	Amigo	AMS159A-1201000FB (UK)	I/P: 100-240 Vac, 50/60 Hz, 0.5 A O/P: 12 Vdc, 1 A

*All adapters only different in plug. Therefore, use US type (adapter 3) as a representative for test.

4. The following antennas were provided to the EUT.

Antenna Type		PIFA								
Antenna Connector		2G1, 5G1: CCT MHF, 2G2, 5G2: KS-MHF								
Brand		WHA YU								
Antenna No.	P/N	Gain (dBi)								
		2400 MHz	2450 MHz	2500 MHz	5150 MHz	5250 MHz	5350 MHz	5725 MHz	5750 MHz	5825 MHz
2G1	C1958-510011-A	2.29	2.31	2.27	-				-	-
2G2	C1958-510012-A	2.51	2.56	2.43	-				-	-
5G1	C1958-510013-A	-	-	-	2.19	2.37	2.44	2.24	2.36	2.23
5G2	C1958-510014-A	-	-	-	2.51	2.33	2.64	2.77	2.56	2.62

* 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.

5. WLAN 2.4GHz & WLAN 5GHz technology can transmit at same time.

6. Spurious emission of the simultaneous operation (WLAN 2.4GHz and WLAN 5GHz) has been evaluated and no non-compliance was found.

3.2 Description of Test Modes

11 channels are provided for 802.11b, 802.11g, 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 \geq 1G	RE<1G	PLC	APCM	
-	√	√	√	√	-

Where RE \geq 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 maximum power.

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 (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)	Remark
-	802.11b	1 to 11	6	DSSS	DBPSK	1.0	-

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)	Remark
-	802.11b	1 to 11	6	DSSS	DBPSK	1.0	-

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.

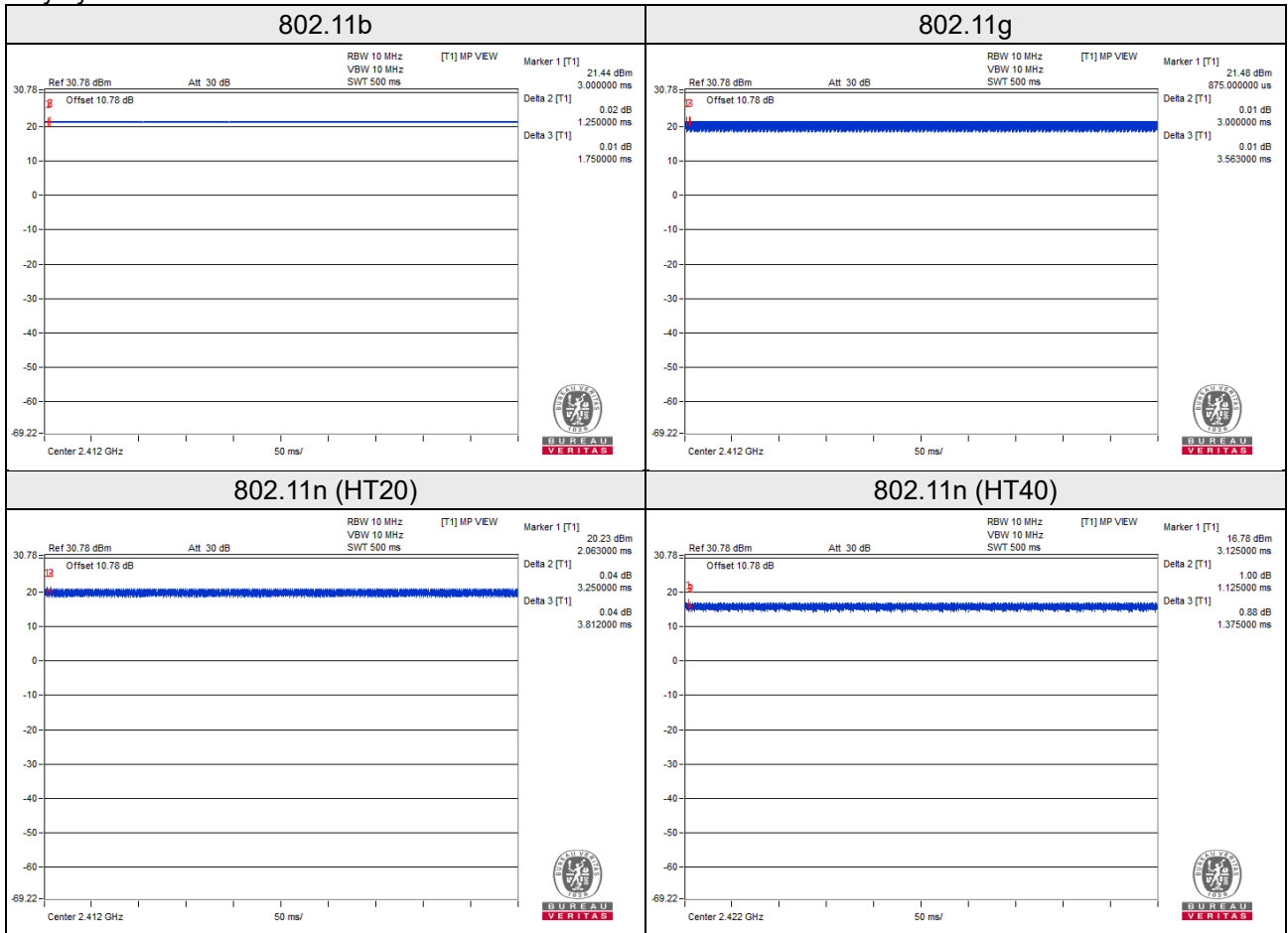
EUT Configure Mode	Mode	Available Channel	Tested Channel	Modulation Technology	Modulation Type	Data Rate (Mbps)	Remark
-	802.11b	1 to 11	1, 6, 11	DSSS	DBPSK	1.0	-
-	802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6.0	
-	802.11n (HT20)	1 to 11	1, 6, 11	OFDM	BPSK	6.5	
-	802.11n (HT40)	3 to 9	3, 6, 9	OFDM	BPSK	13.5	

Test Condition:

Applicable to	Environmental Conditions	Input Power	Tested by
RE\geq1G	23 deg. C, 67% RH	120Vac, 60Hz	Karl Lee, Charies Hsiao, Hary Hsueh
RE<1G	23 deg. C, 67% RH	120Vac, 60Hz	Karl Lee
PLC	23 deg. C, 66% RH	120Vac, 60Hz	Cookie Ku
APCM	25 deg. C, 60% RH	120Vac, 60Hz	Vicent Huang

3.3 Duty Cycle of Test Signal

Duty cycle = 100%



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.

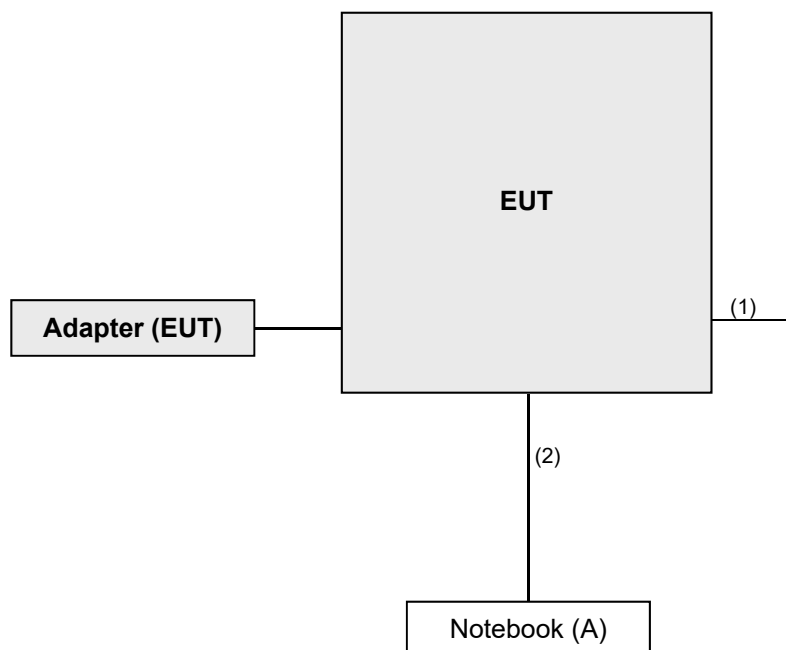
ID	Product	Brand	Model No.	Serial No.	FCC ID	Remarks
A.	Notebook	DELL	LATITUDE	F9MQBW1	FCC DoC Approved	-

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.	LAN	1	1.5	N	0	RJ45, Cat5e (provided by lab)
2.	LAN	1	1.0	N	0	RJ45, Cat5e (Accessory)

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 30dB 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 Agilent Technologies	N9038A	MY52260177	Aug. 24, 2020	Aug. 23, 2021
Spectrum Analyzer ROHDE & SCHWARZ	FSU43	101261	Apr. 16, 2020	Apr. 17, 2021
			Apr. 12, 2021	Apr. 11, 2022
HORN Antenna ETS-Lindgren	3117	00143293	Nov. 22, 2020	Nov. 21, 2021
BILOG Antenna SCHWARZBECK	VULB 9168	9168-616	Nov. 09, 2020	Nov. 08, 2021
HORN Antenna SCHWARZBECK	BBHA 9170	9170-480	Nov. 22, 2020	Nov. 21, 2021
Fixed Attenuator Mini-Circuits	MDCS18N-10	MDCS18N-10-01	Apr. 14, 2020	Apr. 13, 2021
			Apr. 13, 2021	Apr. 12, 2022
Loop Antenna	EM-6879	269	Sep. 17, 2020	Sep. 16, 2021
MXG Vector signal generator Agilent	N5182B	MY53050430	Nov. 25, 2020	Nov. 24, 2021
Preamplifier Agilent	310N	187226	Jun. 17, 2020	Jun. 16, 2021
Preamplifier Agilent	83017A	MY39501357	Jun. 17, 2020	Jun. 16, 2021
Preamplifier EMCI	EMC 184045	980116	Oct. 07, 2020	Oct. 06, 2021
Power Meter Anritsu	ML2495A	1012010	Sep. 01, 2020	Aug. 31, 2021
Power Sensor Anritsu	MA2411B	1315050	Sep. 01, 2020	Aug. 31, 2021
RF signal cable ETS-LINDGREN	5D-FB	Cable-CH1-01(RFC-SMS-100-SMS-120+RFC-SMS-100-SMS-400)	Jun. 17, 2020	Jun. 16, 2021
RF signal cable ETS-LINDGREN	8D-FB	Cable-CH1-02(RFC-SMS-100-SMS-24)	Jun. 17, 2020	Jun. 17, 2021
Boresight Antenna Fixture	FBA-01	FBA-SIP01	NA	NA
Software BV ADT	E3 8.130425b	NA	NA	NA
Antenna Tower MF	NA	NA	NA	NA
Turn Table MF	NA	NA	NA	NA
Antenna Tower & Turn Table Controller MF	MF-7802	NA	NA	NA

- Note: 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in Xindian Chamber 1.

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:

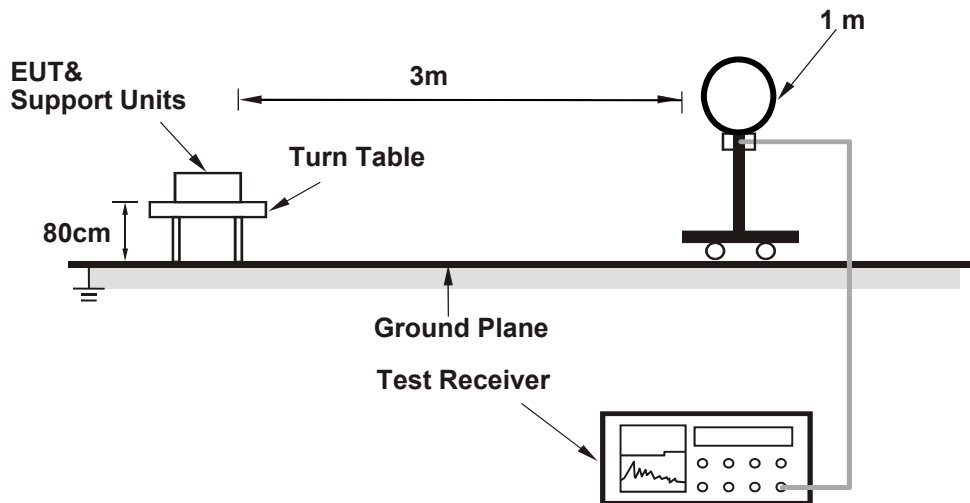
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.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

4.1.4 Deviation from Test Standard

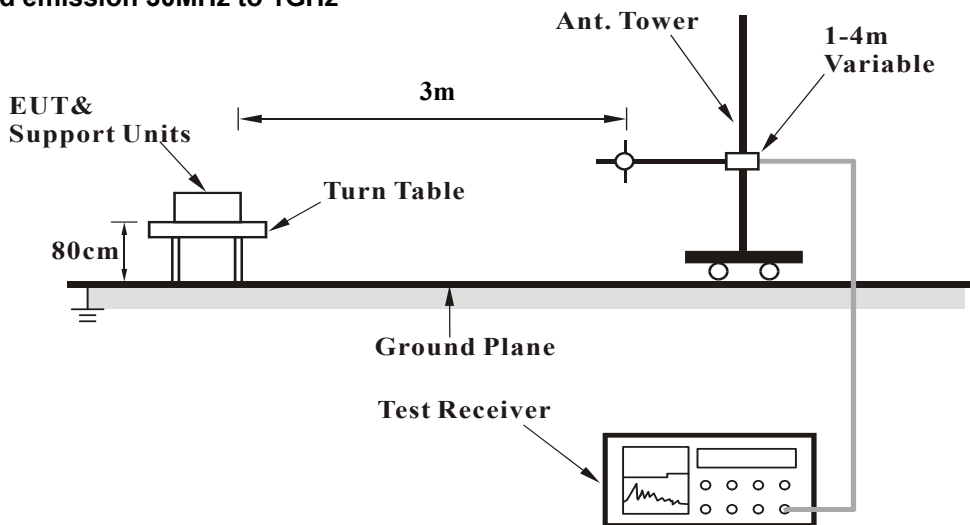
No deviation.

4.1.5 Test Setup

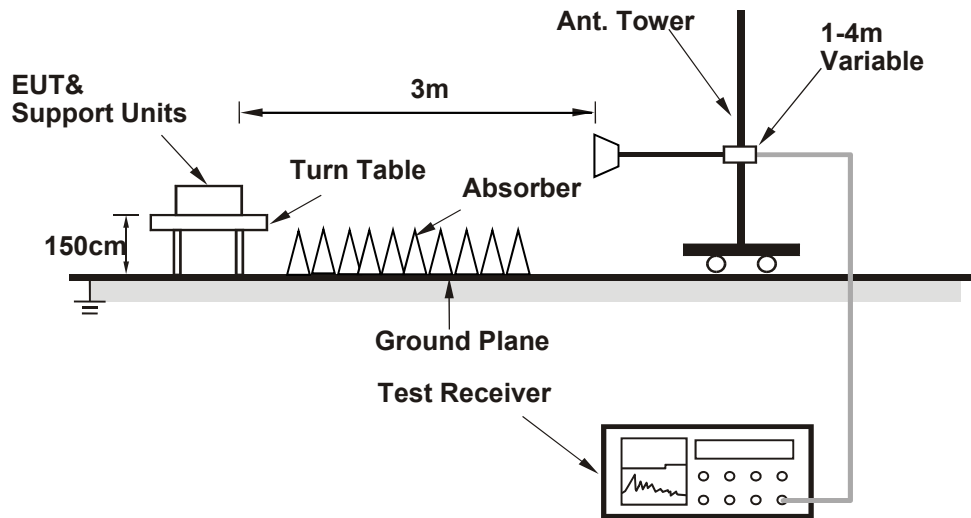
For Radiated emission below 30MHz



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 EUT with a notebook system via a RJ45 cable and placed on a testing table.
- b. The notebook ran a test program (provided by manufacturer) to enable EUT under transmission condition continuously at specific channel frequency.

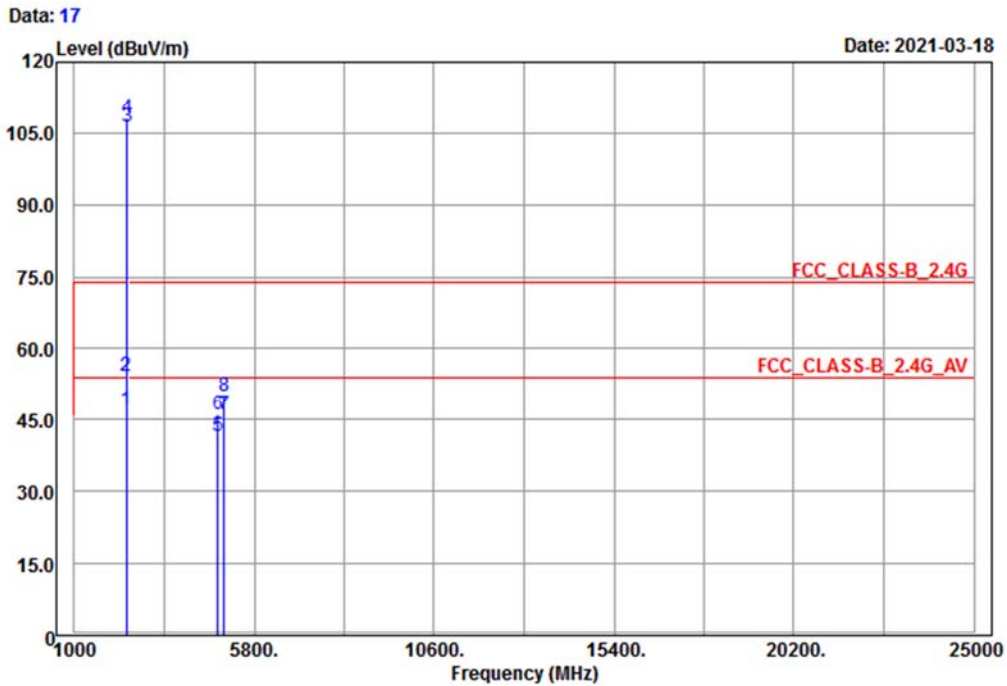
4.1.7 Test Results

Above 1GHz Data:
802.11b



Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T



Site : 966 chamber 1
 Condition: FCC_CLASS-B_2.4G 3m Horizontal
 Remark : 11B_TX_CH01
 Tested by: Karl Lee
 Rate : 1M
 Power : 43/43
 RB/VB : 1 MHz / 10 Hz

	Read	Limit	Over	APos	TPos	Remark
Freq	Level	Level	Factor	Line	Limit	
MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm deg
1 pp	2390.00	47.01	42.51	4.50	54.00	-6.99 152 49 Average
2 pk	2390.00	54.25	49.75	4.50	74.00	-19.75 152 49 Peak
3	2412.00	106.31	101.76	4.55	-----	----- 126 88 Average
4	2412.00	108.14	103.59	4.55	-----	----- 126 88 Peak
5	4824.00	41.41	31.12	10.29	54.00	-12.59 105 241 Average
6	4824.00	46.27	35.98	10.29	74.00	-27.73 105 241 Peak
7	5000.00	46.01	35.42	10.59	54.00	-7.99 197 125 Average
8	5000.00	50.06	39.47	10.59	74.00	-23.94 197 125 Peak

Remarks:

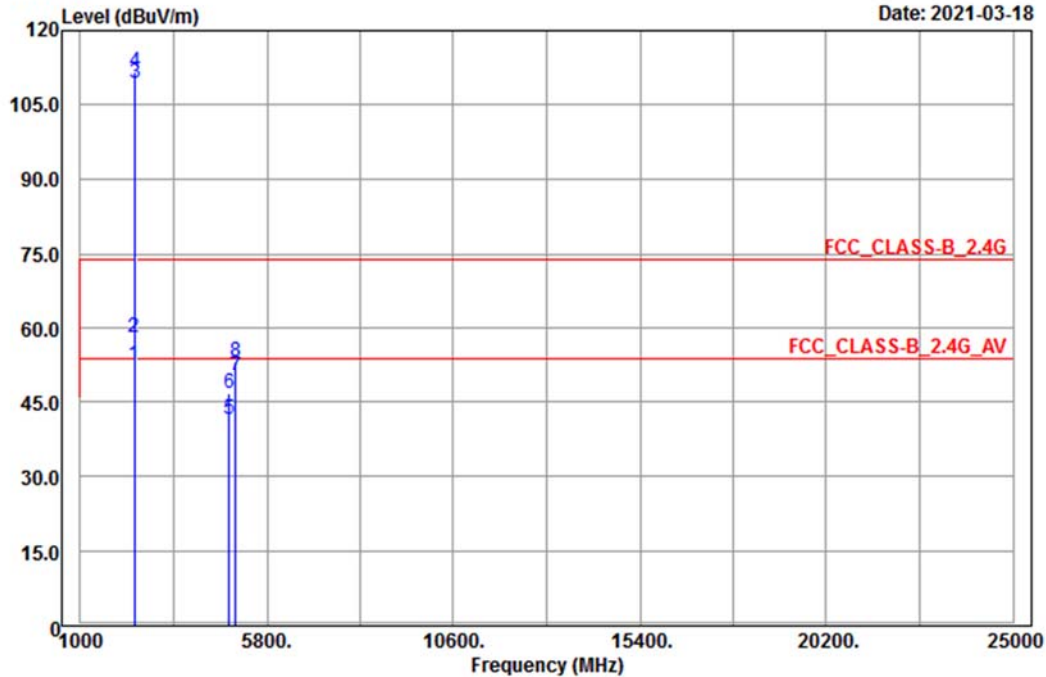
1. Level(dBuV/m) = Read Level(dBuV) + Factor(dB/m)
2. Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Over limit = Level – Limit value
5. The emission levels of other frequencies were very low against the limit.



A D T

Data: 18

Date: 2021-03-18



Site : 966 chamber 1
 Condition: FCC_CLASS-B_2.4G 3m Vertical
 Remark : 11B_TX_CH01
 Tested by: Karl Lee
 Rate : 1M
 Power : 43/43
 RB/VB : 1 MHz / 10 Hz

	Freq	Level	Read	Limit	Over	APos	TPos	Remark
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg
1	pp	2390.00	52.59	48.09	4.50	54.00	-1.41	108 175 Average
2	pk	2390.00	58.16	53.66	4.50	74.00	-15.84	108 175 Peak
3		2412.00	109.29	104.74	4.55	-----	-----	154 162 Average
4		2412.00	111.57	107.02	4.55	-----	-----	154 162 Peak
5		4824.00	41.62	31.33	10.29	54.00	-12.38	135 22 Average
6		4824.00	46.80	36.51	10.29	74.00	-27.20	135 22 Peak
7		5000.00	50.38	39.79	10.59	54.00	-3.62	211 48 Average
8		5000.00	53.39	42.80	10.59	74.00	-20.61	211 48 Peak

Remarks:

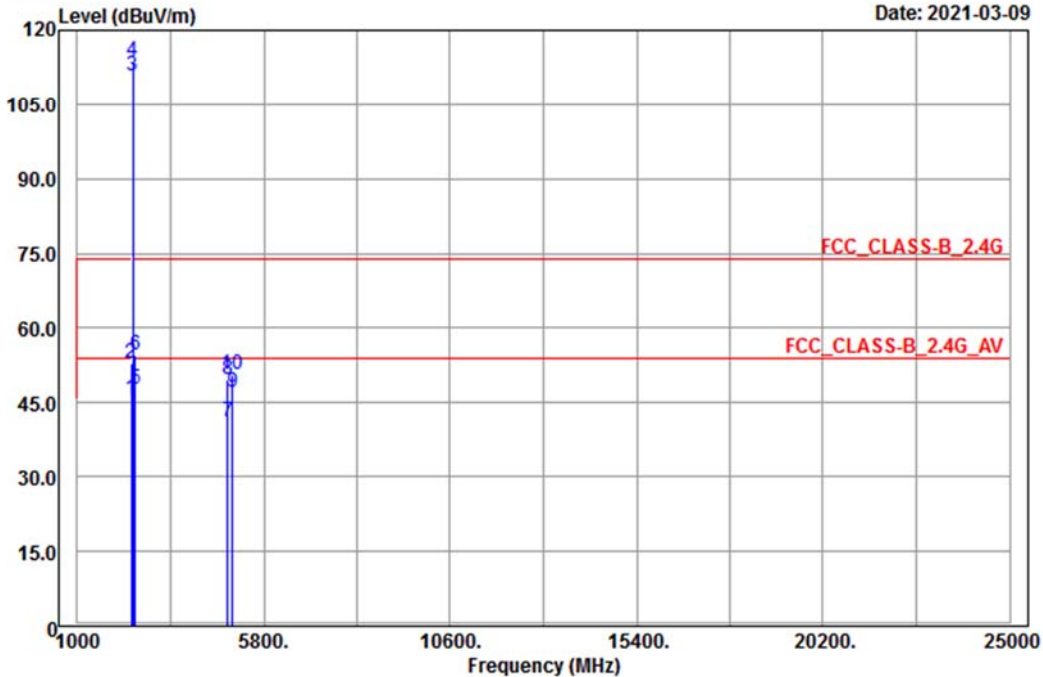
1. Level(dBuV/m) = Read Level(dBuV) + Factor(dB/m)
2. Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Over limit = Level – Limit value
5. The emission levels of other frequencies were very low against the limit.



A D T

Data: 21

Date: 2021-03-09



Site : 966 chamber 1
 Condition: FCC_CLASS-B_2.4G 3m Horizontal
 Remark : 11B_TX_CH06
 Tested by: Charles Hsiao
 Rate : 1M
 Power : 57/57
 RB/VB : 1 MHz / 10 Hz

	Freq	Level	Read Level	Factor	Limit Line	Over Limit	APos	TPos	Remark
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg	
1	2390.00	45.71	41.21	4.50	54.00	-8.29	167	265	Average
2	2390.00	53.11	48.61	4.50	74.00	-20.89	167	265	Peak
3	2437.00	110.84	106.25	4.59	-----	-----	167	265	Average
4	2437.00	113.83	109.24	4.59	-----	-----	167	265	Peak
5	pp 2483.50	47.88	43.22	4.66	54.00	-6.12	167	265	Average
6	pk 2483.50	54.66	50.00	4.66	74.00	-19.34	167	265	Peak
7	4874.00	41.20	30.99	10.21	54.00	-12.80	188	208	Average
8	4874.00	49.67	39.46	10.21	74.00	-24.33	188	208	Peak
9	5000.00	47.02	36.43	10.59	54.00	-6.98	197	125	Average
10	5000.00	50.82	40.23	10.59	74.00	-23.18	197	125	Peak

Remarks:

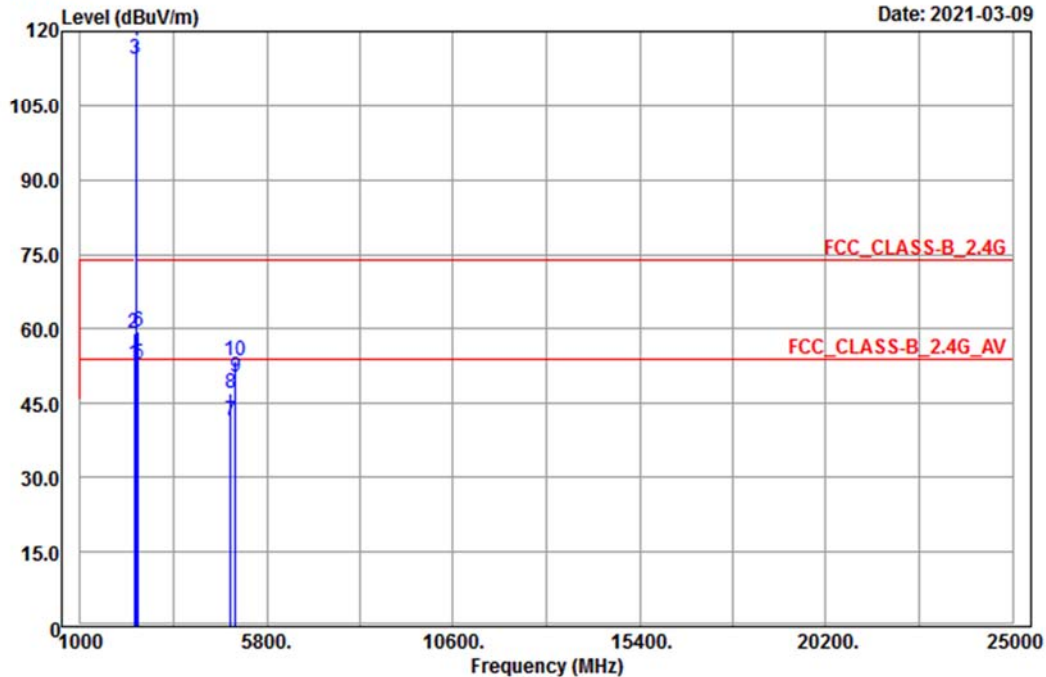
1. Level(dBuV/m) = Read Level(dBuV) + Factor(dB/m)
2. Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Over limit = Level – Limit value
5. The emission levels of other frequencies were very low against the limit.



A D T

Data: 22

Date: 2021-03-09



Site : 966 chamber 1
 Condition: FCC_CLASS-B_2.4G 3m Vertical
 Remark : 11B_TX_CH06
 Tested by: Charles Hsiao
 Rate : 1M
 Power : 57/57
 RB/VB : 1 MHz / 10 Hz

	Freq	Level	Read Level	Factor	Limit Line	Over Limit	APos	TPos	Remark
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg	
1	pp	2390.00	53.00	48.50	4.50	54.00	-1.00	130	0 Average
2		2390.00	59.09	54.59	4.50	74.00	-14.91	130	0 Peak
3		2437.00	114.45	109.86	4.59	-----	-----	128	2 Average
4		2437.00	117.91	113.32	4.59	-----	-----	128	2 Peak
5		2483.50	52.93	48.27	4.66	54.00	-1.07	127	92 Average
6	pk	2483.50	59.37	54.71	4.66	74.00	-14.63	127	92 Peak
7		4874.00	41.47	31.26	10.21	54.00	-12.53	145	155 Average
8		4874.00	46.99	36.78	10.21	74.00	-27.01	145	155 Peak
9		5000.00	50.29	39.70	10.59	54.00	-3.71	211	48 Average
10		5000.00	53.63	43.04	10.59	74.00	-20.37	211	48 Peak

Remarks:

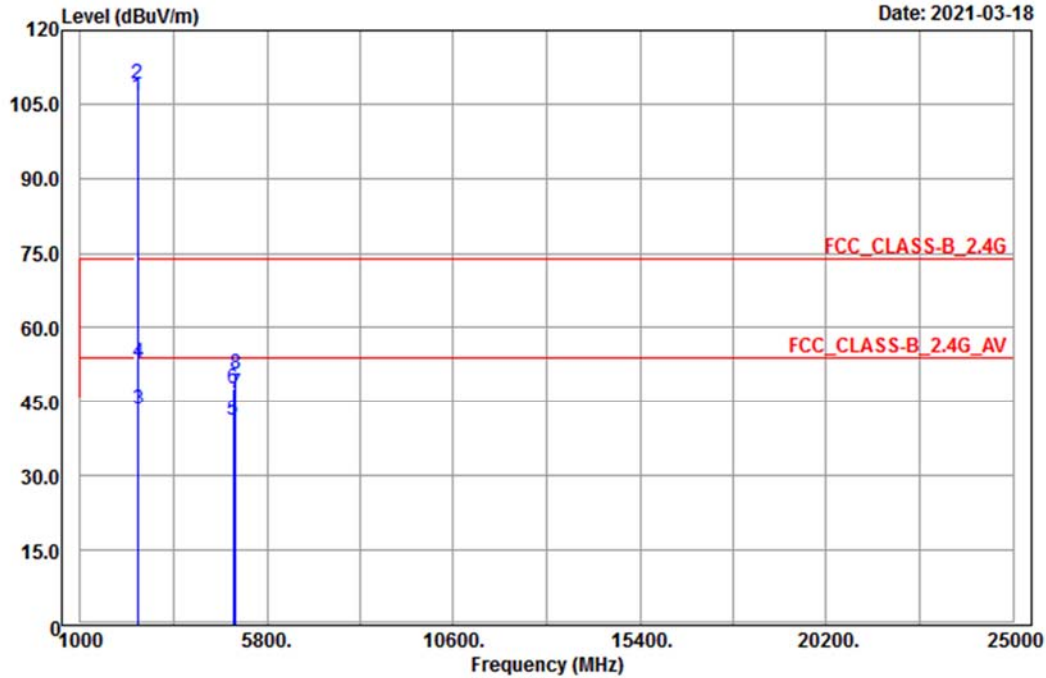
1. Level(dBuV/m) = Read Level(dBuV) + Factor(dB/m)
2. Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Over limit = Level – Limit value
5. The emission levels of other frequencies were very low against the limit.



A D T

Data: 13

Date: 2021-03-18



Site : 966 chamber 1
 Condition: FCC_CLASS-B_2.4G 3m Horizontal
 Remark : 11B_TX_CH11
 Tested by: Charles Hsiao
 Rate : 1M
 Power : 44/44
 RB/VB : 1 MHz / 10 Hz

	Read	Limit	Over	APos	TPos	Remark			
Freq	Level	Level	Factor	Line	Limit				
MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB				
1	2462.00	106.47	101.85	4.62	-----	-----	168	50	Average
2	2462.00	109.23	104.61	4.62	-----	-----	168	50	Peak
3	2483.50	43.36	38.70	4.66	54.00	-10.64	168	50	Average
4 pk	2483.50	53.09	48.43	4.66	74.00	-20.91	168	50	Peak
5	4944.00	41.21	30.86	10.35	54.00	-12.79	105	5	Average
6	4944.00	47.90	37.55	10.35	74.00	-26.10	105	5	Peak
7 pp	5000.00	46.84	36.25	10.59	54.00	-7.16	197	125	Average
8	5000.00	50.80	40.21	10.59	74.00	-23.20	197	125	Peak

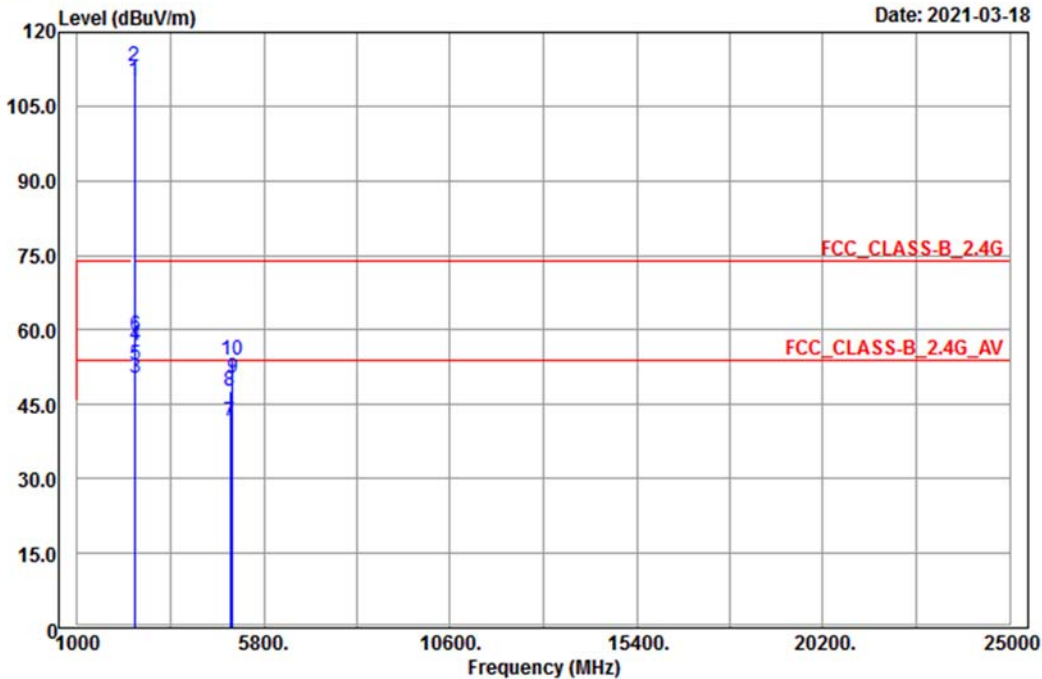
Remarks:

1. Level(dBuV/m) = Read Level(dBuV) + Factor(dB/m)
2. 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. Over limit = Level – Limit value
5. The emission levels of other frequencies were very low against the limit.



A D T

Data: 14



Site : 966 chamber 1
 Condition: FCC_CLASS-B_2.4G 3m Vertical
 Remark : 11B_TX_CH11
 Tested by: Charles Hsiao
 Rate : 1M
 Power : 44/44
 RB/VB : 1 MHz / 10 Hz

	Freq	Level	Read Level	Factor	Limit Line	Over Limit	APos	TPos	Remark
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg	
1	2462.00	110.22	105.60	4.62	-----	-----	127	92	Average
2	2462.00	113.20	108.58	4.62	-----	-----	127	92	Peak
3	2483.50	50.24	45.58	4.66	54.00	-3.76	178	360	Average
4	2483.50	56.77	52.11	4.66	74.00	-17.23	178	360	Peak
5	2487.84	52.98	48.30	4.68	54.00	-1.02	178	360	Average
6	2487.84	58.78	54.10	4.68	74.00	-15.22	178	360	Peak
7	4944.00	41.60	31.25	10.35	54.00	-12.40	127	77	Average
8	4944.00	47.82	37.47	10.35	74.00	-26.18	127	77	Peak
9	5000.00	50.42	39.83	10.59	54.00	-3.58	211	48	Average
10	5000.00	53.96	43.37	10.59	74.00	-20.04	211	48	Peak

Remarks:

1. Level(dBuV/m) = Read Level(dBuV) + Factor(dB/m)
2. 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. Over limit = Level – Limit value
5. The emission levels of other frequencies were very low against the limit.

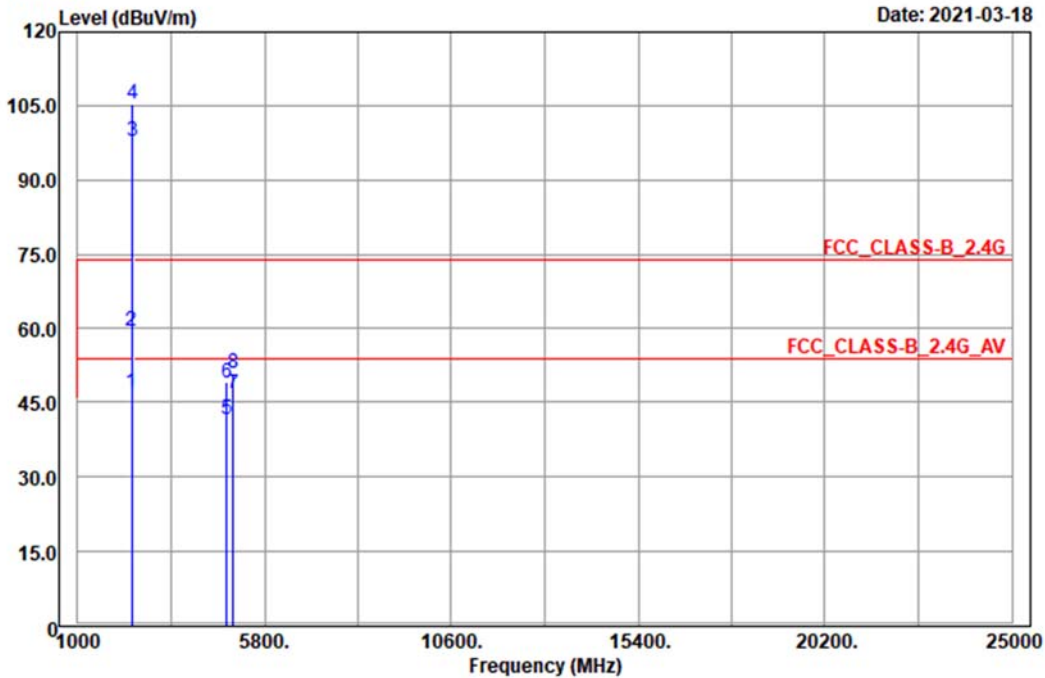
802.11g



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A D T

Data: 13



Site : 966 chamber 1
 Condition: FCC_CLASS-B_2.4G 3m Horizontal
 Remark : 11G_TX_CH01
 Tested by: Karl Lee
 Rate : 6M
 Power : 37/37
 RB/VB : 1 MHz / 10 Hz

	Freq	Level	Read Level	Factor	Limit Line	Over Limit	APos	TPos	Remark
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg	
1	pp	2390.00	47.17	42.67	4.50	54.00	-6.83	196	124 Average
2	pk	2390.00	59.38	54.88	4.50	74.00	-14.62	196	124 Peak
3		2412.00	97.81	93.26	4.55	-----	-----	230	106 Average
4		2412.00	105.18	100.63	4.55	-----	-----	230	106 Peak
5		4824.00	41.43	31.14	10.29	54.00	-12.57	113	24 Average
6		4824.00	49.02	38.73	10.29	74.00	-24.98	113	24 Peak
7		5000.00	46.89	36.30	10.59	54.00	-7.11	197	125 Average
8		5000.00	50.92	40.33	10.59	74.00	-23.08	197	125 Peak

Remarks:

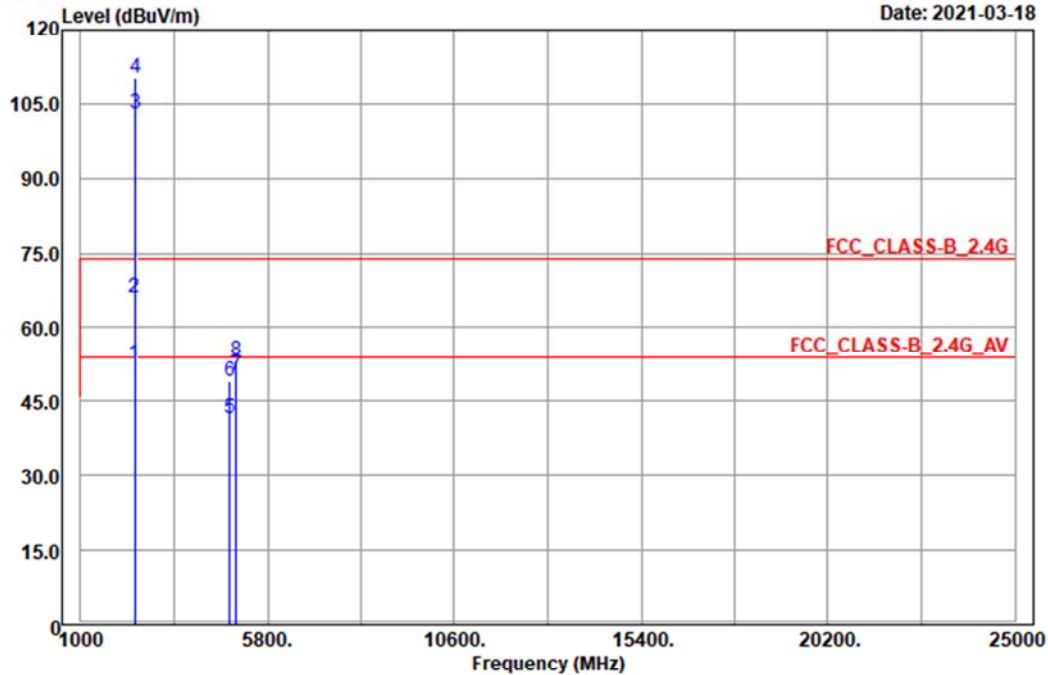
1. Level(dBuV/m) = Read Level(dBuV) + Factor(dB/m)
2. Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Over limit = Level – Limit value
5. The emission levels of other frequencies were very low against the limit.



A D T

Data: 14

Date: 2021-03-18



Site : 966 chamber 1
 Condition: FCC_CLASS-B_2.4G 3m Vertical
 Remark : 11G_TX_CH01
 Tested by: Karl Lee
 Rate : 6M
 Power : 37/37
 RB/VB : 1 MHz / 10 Hz

	Read	Limit	Over	APos	TPos	Remark			
Freq	Level	Level	Factor	Line	Limit				
MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB				
1 pp	2390.00	52.53	48.03	4.50	54.00	-1.47	160	137	Average
2 pk	2390.00	66.18	61.68	4.50	74.00	-7.82	160	137	Peak
3	2412.00	102.94	98.39	4.55	-----	-----	184	144	Average
4	2412.00	110.12	105.57	4.55	-----	-----	184	144	Peak
5	4824.00	41.58	31.29	10.29	54.00	-12.42	123	332	Average
6	4824.00	48.91	38.62	10.29	74.00	-25.09	123	332	Peak
7	5000.00	50.30	39.71	10.59	54.00	-3.70	211	48	Average
8	5000.00	53.35	42.76	10.59	74.00	-20.65	211	48	Peak

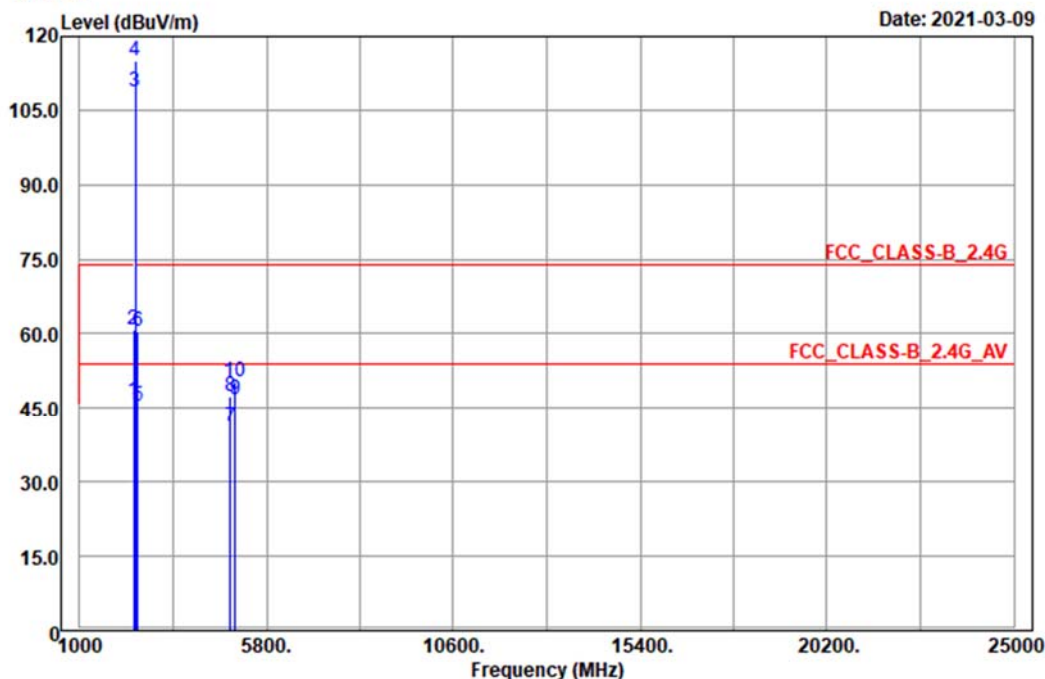
Remarks:

1. Level(dBuV/m) = Read Level(dBuV) + Factor(dB/m)
2. 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. Over limit = Level – Limit value
5. The emission levels of other frequencies were very low against the limit.



A D T

Data: 21



Site : 966 chamber 1
 Condition: FCC_CLASS-B_2.4G 3m Horizontal
 Remark : 11G_TX_CH06
 Tested by: Harry Hsueh
 Rate : 6M
 Power : 60/60
 RB/VB : 1 MHz / 10 Hz

	Freq	Level	Read Level	Factor	Limit Line	Over Limit	APos	TPos	Remark
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg	
1	2390.00	46.31	41.81	4.50	54.00	-7.69	290	259	Average
2 pk	2390.00	60.79	56.29	4.50	74.00	-13.21	290	259	Peak
3	2437.00	108.85	104.26	4.59	-----	-----	290	259	Average
4	2437.00	115.23	110.64	4.59	-----	-----	290	259	Peak
5	2483.50	45.42	40.76	4.66	54.00	-8.58	290	259	Average
6	2483.50	60.64	55.98	4.66	74.00	-13.36	290	259	Peak
7	4874.00	41.28	31.07	10.21	54.00	-12.72	124	208	Average
8	4874.00	47.50	37.29	10.21	74.00	-26.50	124	208	Peak
9 pp	5000.00	46.90	36.31	10.59	54.00	-7.10	197	125	Average
10	5000.00	50.42	39.83	10.59	74.00	-23.58	197	125	Peak

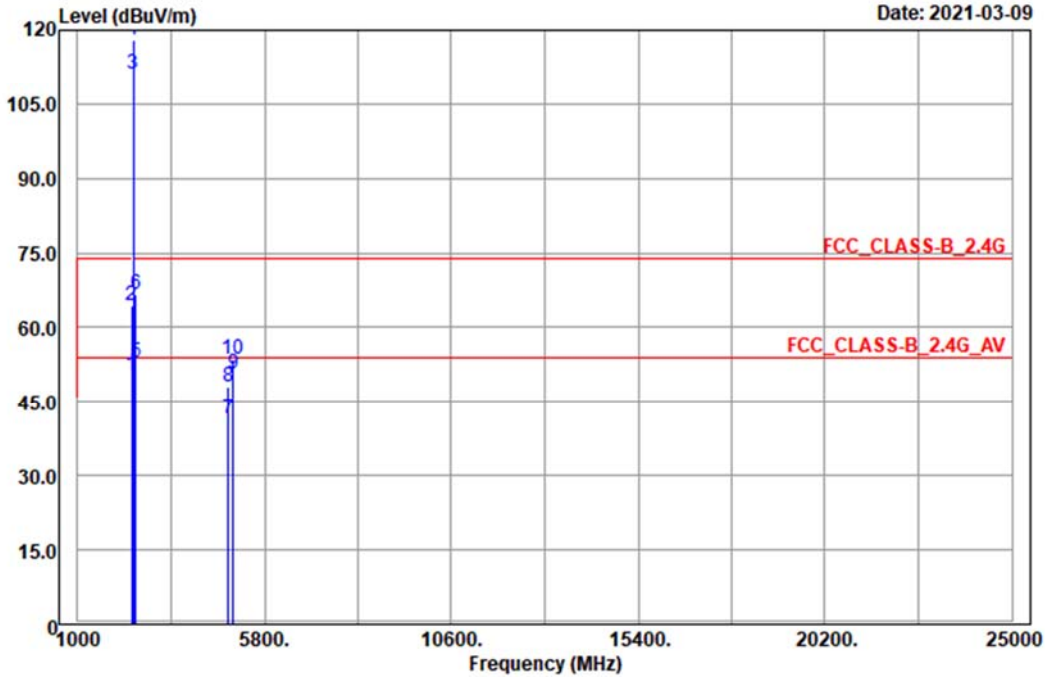
Remarks:

1. Level(dBuV/m) = Read Level(dBuV) + Factor(dB/m)
2. 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. Over limit = Level – Limit value
5. The emission levels of other frequencies were very low against the limit.



A D T

Data: 22



Site : 966 chamber 1
 Condition: FCC_CLASS-B_2.4G 3m Vertical
 Remark : 11G_TX_CH06
 Tested by: Harry Hsueh
 Rate : 6M
 Power : 60/60
 RB/VB : 1 MHz / 10 Hz

	Freq	Level	Read Level	Factor	Limit	Over Limit	APos	TPos	Remark
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg	
1	2390.00	50.29	45.79	4.50	54.00	-3.71	176	84	Average
2	2390.00	64.50	60.00	4.50	74.00	-9.50	176	84	Peak
3	2437.00	111.31	106.72	4.59	-----	-----	127	90	Average
4	2437.00	118.01	113.42	4.59	-----	-----	127	90	Peak
5 pp	2483.50	52.96	48.30	4.66	54.00	-1.04	137	358	Average
6 pk	2483.50	66.78	62.12	4.66	74.00	-7.22	137	358	Peak
7	4874.00	41.63	31.42	10.21	54.00	-12.37	174	84	Average
8	4874.00	48.07	37.86	10.21	74.00	-25.93	174	84	Peak
9	5000.00	50.61	40.02	10.59	54.00	-3.39	211	48	Average
10	5000.00	53.57	42.98	10.59	74.00	-20.43	211	48	Peak

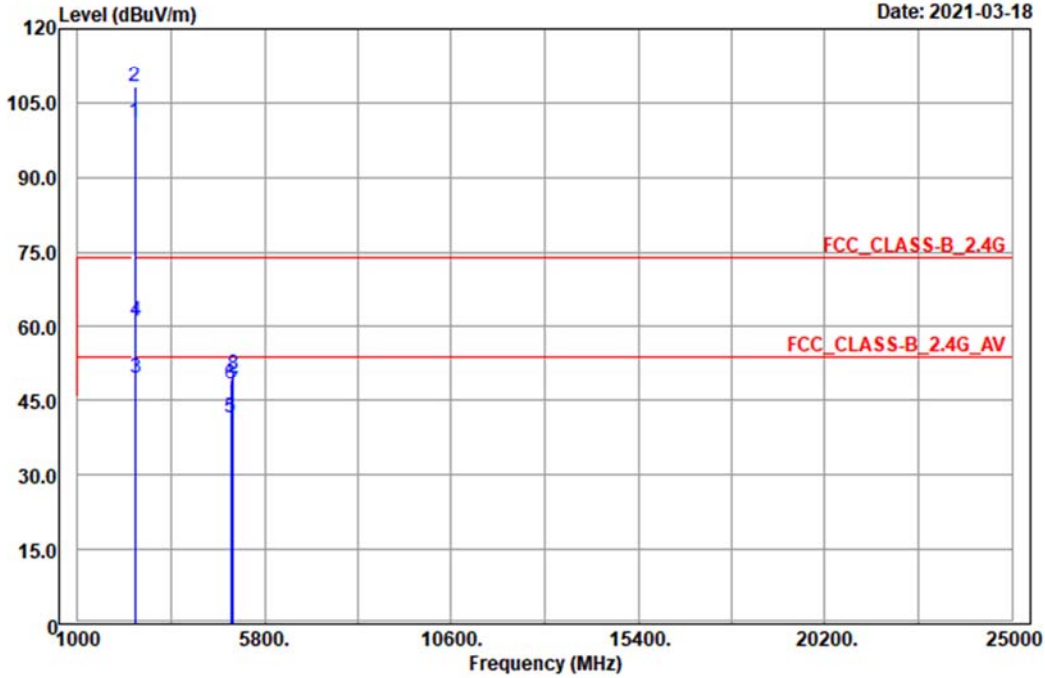
Remarks:

1. Level(dBuV/m) = Read Level(dBuV) + Factor(dB/m)
2. 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. Over limit = Level – Limit value
5. The emission levels of other frequencies were very low against the limit.



A D T

Data: 13



Site : 966 chamber 1
 Condition: FCC_CLASS-B_2.4G 3m Horizontal
 Remark : 11G_TX_CH11
 Tested by: Charles Hsiao
 Rate : 6M
 Power : 41/41
 RB/VB : 1 MHz / 10 Hz

	Freq	Level	Read Level	Factor	Limit Line	Over Limit	APos	TPos	Remark
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg	
1	2462.00	101.16	96.54	4.62	-----	-----	290	259	Average
2	2462.00	108.09	103.47	4.62	-----	-----	290	259	Peak
3 pp	2483.50	49.56	44.90	4.66	54.00	-4.44	290	259	Average
4 pk	2483.50	61.13	56.47	4.66	74.00	-12.87	290	259	Peak
5	4924.00	41.47	31.22	10.25	54.00	-12.53	186	196	Average
6	4924.00	48.25	38.00	10.25	74.00	-25.75	186	196	Peak
7	5000.00	47.12	36.53	10.59	54.00	-6.88	197	125	Average
8	5000.00	50.47	39.88	10.59	74.00	-23.53	197	125	Peak

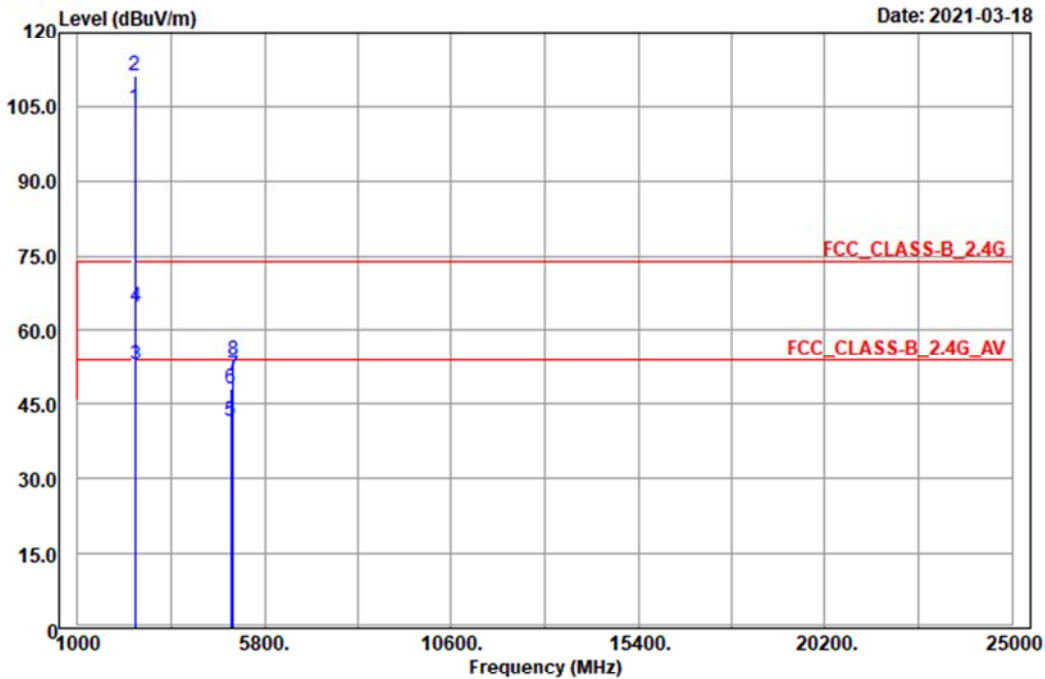
Remarks:

1. Level(dBuV/m) = Read Level(dBuV) + Factor(dB/m)
2. 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. Over limit = Level – Limit value
5. The emission levels of other frequencies were very low against the limit.



A D T

Data: 14



Site : 966 chamber 1
 Condition: FCC_CLASS-B_2.4G 3m Vertical
 Remark : 11G_TX_CH11
 Tested by: Charles Hsiao
 Rate : 6M
 Power : 41/41
 RB/VB : 1 MHz / 10 Hz

	Freq	Level	Read Level	Factor	Limit Line	Over Limit	APos	TPos	Remark
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg	
1	2462.00	104.48	99.86	4.62	-----	-----	127	0	Average
2	2462.00	111.18	106.56	4.62	-----	-----	127	0	Peak
3	pp 2483.50	52.99	48.33	4.66	54.00	-1.01	200	224	Average
4	pk 2483.50	64.74	60.08	4.66	74.00	-9.26	200	224	Peak
5	4924.00	41.64	31.39	10.25	54.00	-12.36	124	251	Average
6	4924.00	47.95	37.70	10.25	74.00	-26.05	124	251	Peak
7	5000.00	50.74	40.15	10.59	54.00	-3.26	211	48	Average
8	5000.00	53.83	43.24	10.59	74.00	-20.17	211	48	Peak

Remarks:

1. Level(dBuV/m) = Read Level(dBuV) + Factor(dB/m)
2. 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. Over limit = Level – Limit value
5. The emission levels of other frequencies were very low against the limit.

802.11n (HT20)

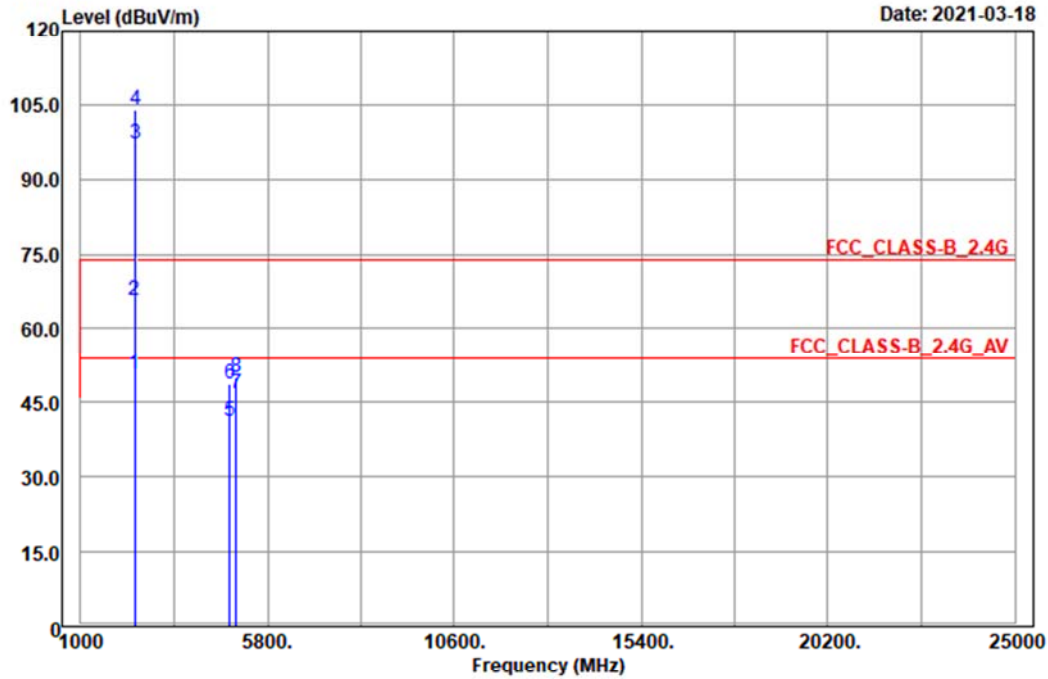


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A D T

Data: 13

Date: 2021-03-18



Site : 966 chamber 1
 Condition: FCC_CLASS-B_2.4G 3m Horizontal
 Remark : 11N_HT20_TX_CH01
 Tested by: Karl Lee
 Rate : MCS0
 Power : 37/37
 RB/VB : 1 MHz / 10 Hz

	Freq	Level	Read Level	Factor	Limit	Over	Apos	TPos	Remark
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg	
1 pp	2390.00	50.55	46.05	4.50	54.00	-3.45	208	131	Average
2 pk	2390.00	65.77	61.27	4.50	74.00	-8.23	208	131	Peak
3	2412.00	97.11	92.56	4.55	-----	-----	229	106	Average
4	2412.00	104.07	99.52	4.55	-----	-----	229	106	Peak
5	4824.00	41.29	31.00	10.29	54.00	-12.71	164	4	Average
6	4824.00	48.84	38.55	10.29	74.00	-25.16	164	4	Peak
7	5000.00	46.85	36.26	10.59	54.00	-7.15	197	125	Average
8	5000.00	50.16	39.57	10.59	74.00	-23.84	197	125	Peak

Remarks:

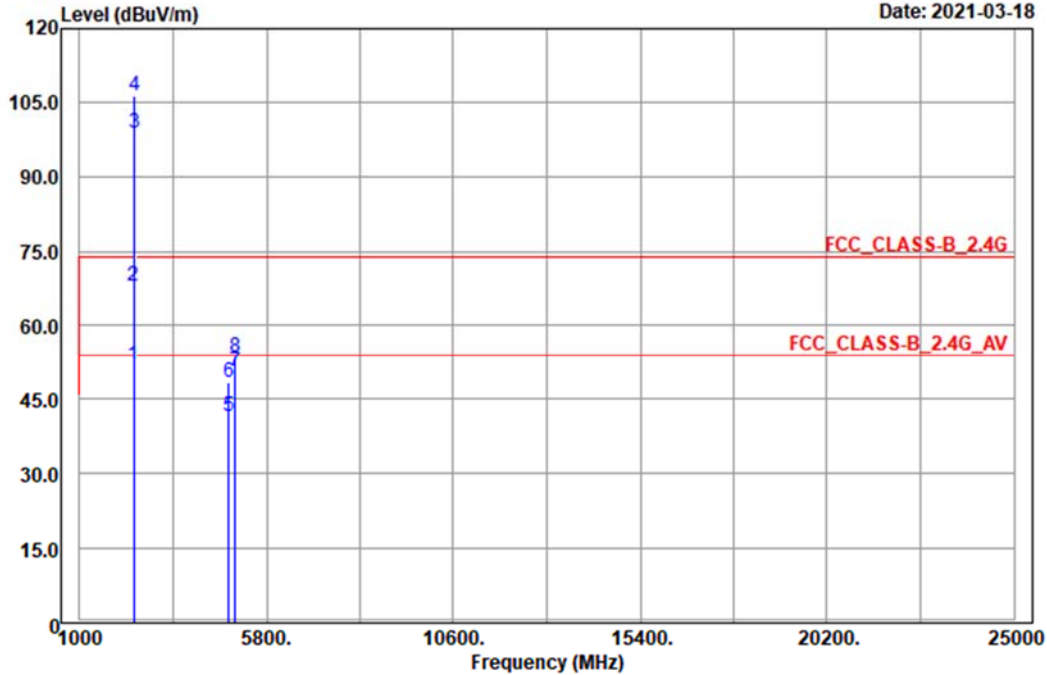
1. Level(dBuV/m) = Read Level(dBuV) + Factor(dB/m)
2. Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Over limit = Level – Limit value
5. The emission levels of other frequencies were very low against the limit.



A D T

Data: 14

Date: 2021-03-18



Site : 966 chamber 1
 Condition: FCC_CLASS-B_2.4G 3m Vertical
 Remark : 11N_HT20_TX_CH01
 Tested by: Karl Lee
 Rate : MCS0
 Power : 37/37
 RB/VB : 1 MHz / 10 Hz

	Read	Limit	Over	Apos	Tpos	Remark	
Freq	Level	Factor	Line	Limit			
MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg
1 pp	2390.00	52.07	47.57	4.50	54.00	-1.93	160 137 Average
2 pk	2390.00	68.03	63.53	4.50	74.00	-5.97	160 137 Peak
3	2412.00	98.80	94.25	4.55	-----	-----	146 155 Average
4	2412.00	106.24	101.69	4.55	-----	-----	146 155 Peak
5	4824.00	41.57	31.28	10.29	54.00	-12.43	151 101 Average
6	4824.00	48.39	38.10	10.29	74.00	-25.61	151 101 Peak
7	5000.00	50.78	40.19	10.59	54.00	-3.22	211 48 Average
8	5000.00	53.59	43.00	10.59	74.00	-20.41	211 48 Peak

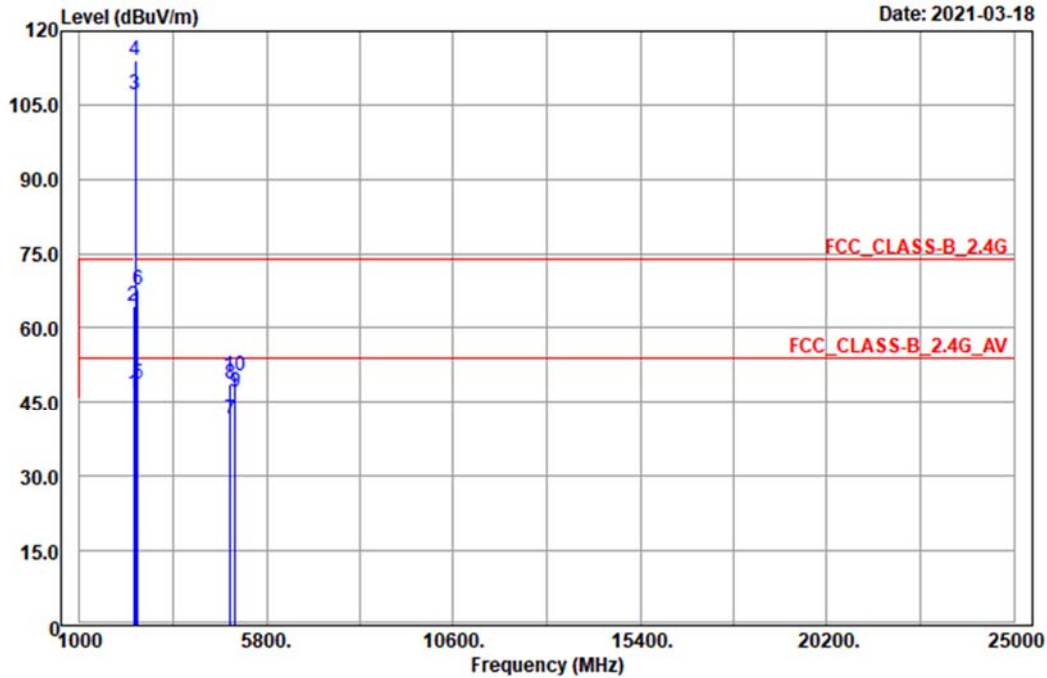
Remarks:

1. Level(dBuV/m) = Read Level(dBuV) + Factor(dB/m)
2. 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. Over limit = Level – Limit value
5. The emission levels of other frequencies were very low against the limit.



A D T

Data: 17



Site : 966 chamber 1
 Condition: FCC_CLASS-B_2.4G 3m Horizontal
 Remark : 11N_HT20_TX_CH06
 Tested by: Charles Hsiao
 Rate : MCS0
 Power : 60/60
 RB/VB : 1 MHz / 10 Hz

	Freq	Level	Read Level	Factor	Limit	Over Limit	APos	TPos	Remark
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg	
1	2390.00	46.72	42.22	4.50	54.00	-7.28	290	259	Average
2	2390.00	64.39	59.89	4.50	74.00	-9.61	290	259	Peak
3	2437.00	107.41	102.82	4.59	-----	-----	290	259	Average
4	2437.00	114.00	109.41	4.59	-----	-----	290	259	Peak
5	2483.50	48.88	44.22	4.66	54.00	-5.12	290	259	Average
6	2483.50	67.54	62.88	4.66	74.00	-6.46	290	259	Peak
7	4874.00	41.53	31.32	10.21	54.00	-12.47	184	8	Average
8	4874.00	48.85	38.64	10.21	74.00	-25.15	184	8	Peak
9	5000.00	47.03	36.44	10.59	54.00	-6.97	197	125	Average
10	5000.00	50.45	39.86	10.59	74.00	-23.55	197	125	Peak

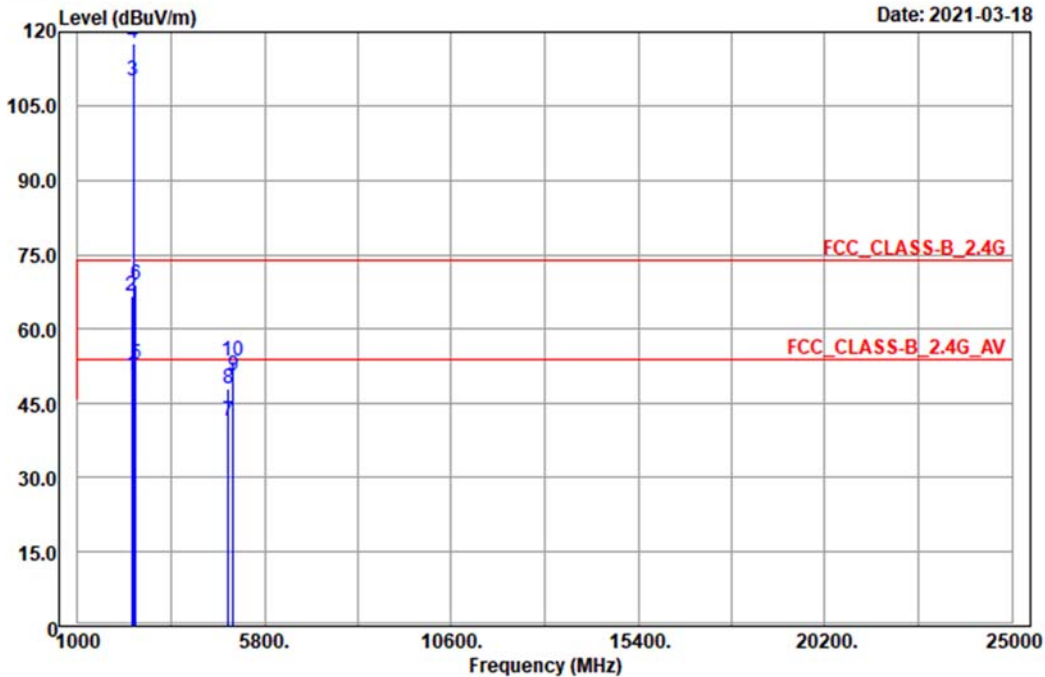
Remarks:

1. Level(dBuV/m) = Read Level(dBuV) + Factor(dB/m)
2. 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. Over limit = Level – Limit value
5. The emission levels of other frequencies were very low against the limit.



A D T

Data: 18



Site : 966 chamber 1
 Condition: FCC_CLASS-B_2.4G 3m Vertical
 Remark : 11N_HT20_TX_CH06
 Tested by: Charles Hsiao
 Rate : MCS0
 Power : 60/60
 RB/VB : 1 MHz / 10 Hz

	Freq	Level	Read Level	Factor	Limit Line	Over Limit	APos	TPos	Remark
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg	
1	2390.00	50.69	46.19	4.50	54.00	-3.31	176	84	Average
2	2390.00	66.69	62.19	4.50	74.00	-7.31	176	84	Peak
3	2437.00	110.28	105.69	4.59	-----	-----	264	0	Average
4	2437.00	117.64	113.05	4.59	-----	-----	264	0	Peak
5 pp	2483.50	52.93	48.27	4.66	54.00	-1.07	137	358	Average
6 pk	2483.50	68.95	64.29	4.66	74.00	-5.05	137	358	Peak
7	4874.00	41.62	31.41	10.21	54.00	-12.38	148	138	Average
8	4874.00	48.14	37.93	10.21	74.00	-25.86	148	138	Peak
9	5000.00	50.84	40.25	10.59	54.00	-3.16	211	48	Average
10	5000.00	53.62	43.03	10.59	74.00	-20.38	211	48	Peak

Remarks:

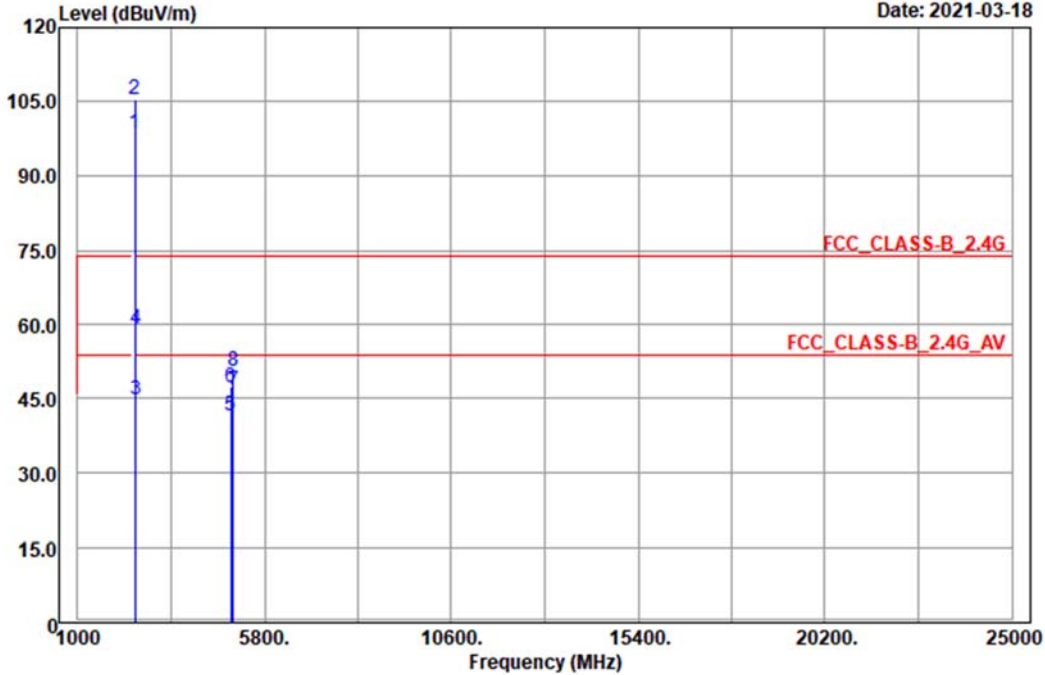
1. Level(dBuV/m) = Read Level(dBuV) + Factor(dB/m)
2. Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Over limit = Level – Limit value
5. The emission levels of other frequencies were very low against the limit.



A D T

Data: 13

Date: 2021-03-18



Site : 966 chamber 1
 Condition: FCC_CLASS-B_2.4G 3m Horizontal
 Remark : 11N_HT20_TX_CH11
 Tested by: Charles Hsiao
 Rate : MCS0
 Power : 41/41
 RB/VB : 1 MHz / 10 Hz

	Freq	Level	Read Level	Factor	Limit Line	Over Limit	APos	TPos	Remark
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg	
1	2462.00	98.57	93.95	4.62	-----	-----	271	259	Average
2	2462.00	105.26	100.64	4.62	-----	-----	271	259	Peak
3	2483.50	44.92	40.26	4.66	54.00	-9.08	271	259	Average
4 pk	2483.50	59.15	54.49	4.66	74.00	-14.85	271	259	Peak
5	4924.00	41.53	31.28	10.25	54.00	-12.47	185	278	Average
6	4924.00	47.34	37.09	10.25	74.00	-26.66	185	278	Peak
7 pp	5000.00	46.82	36.23	10.59	54.00	-7.18	197	125	Average
8	5000.00	50.55	39.96	10.59	74.00	-23.45	197	125	Peak

Remarks:

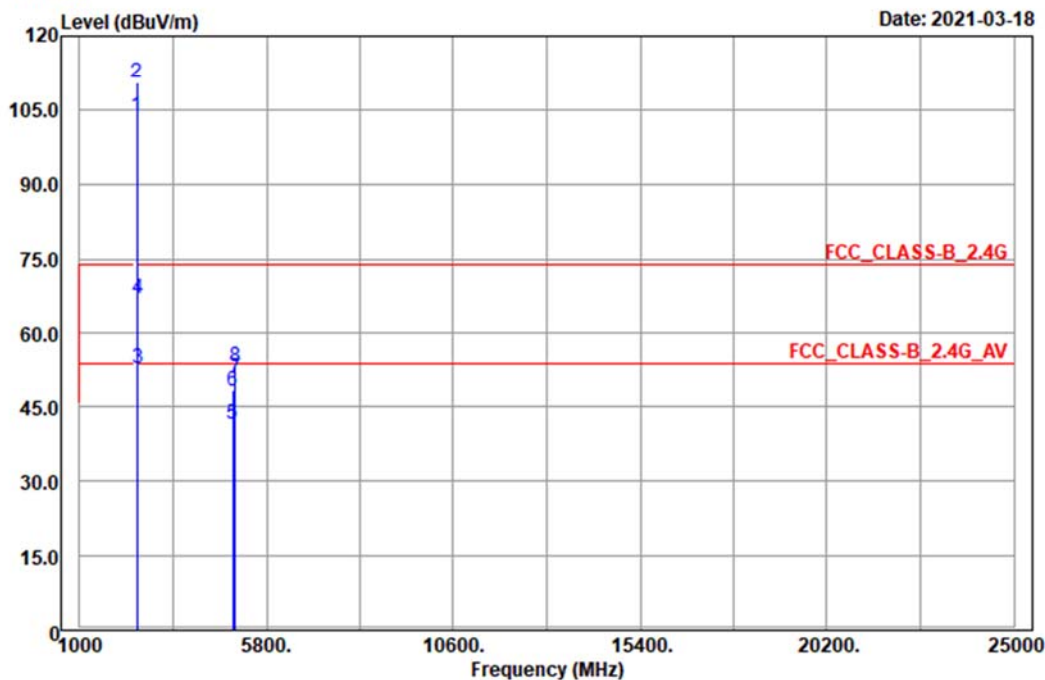
1. Level(dBuV/m) = Read Level(dBuV) + Factor(dB/m)
2. Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Over limit = Level – Limit value
5. The emission levels of other frequencies were very low against the limit.



A D T

Data: 14

Date: 2021-03-18



Site : 966 chamber 1
 Condition: FCC_CLASS-B_2.4G 3m Vertical
 Remark : 11N_HT20_TX_CH11
 Tested by: Charles Hsiao
 Rate : MCS0
 Power : 41/41
 RB/VB : 1 MHz / 10 Hz

	Freq	Level	Read Level	Factor	Limit Line	Over Limit	APos	TPos	Remark
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg	
1	2462.00	103.69	99.07	4.62	-----	-----	127	90	Average
2	2462.00	110.43	105.81	4.62	-----	-----	127	90	Peak
3	pp 2483.50	52.92	48.26	4.66	54.00	-1.08	200	224	Average
4	pk 2483.50	67.17	62.51	4.66	74.00	-6.83	200	224	Peak
5	4924.00	41.66	31.41	10.25	54.00	-12.34	154	7	Average
6	4924.00	48.26	38.01	10.25	74.00	-25.74	154	7	Peak
7	5000.00	50.92	40.33	10.59	54.00	-3.08	211	48	Average
8	5000.00	53.46	42.87	10.59	74.00	-20.54	211	48	Peak

Remarks:

1. Level(dBuV/m) = Read Level(dBuV) + Factor(dB/m)
2. 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. Over limit = Level – Limit value
5. The emission levels of other frequencies were very low against the limit.

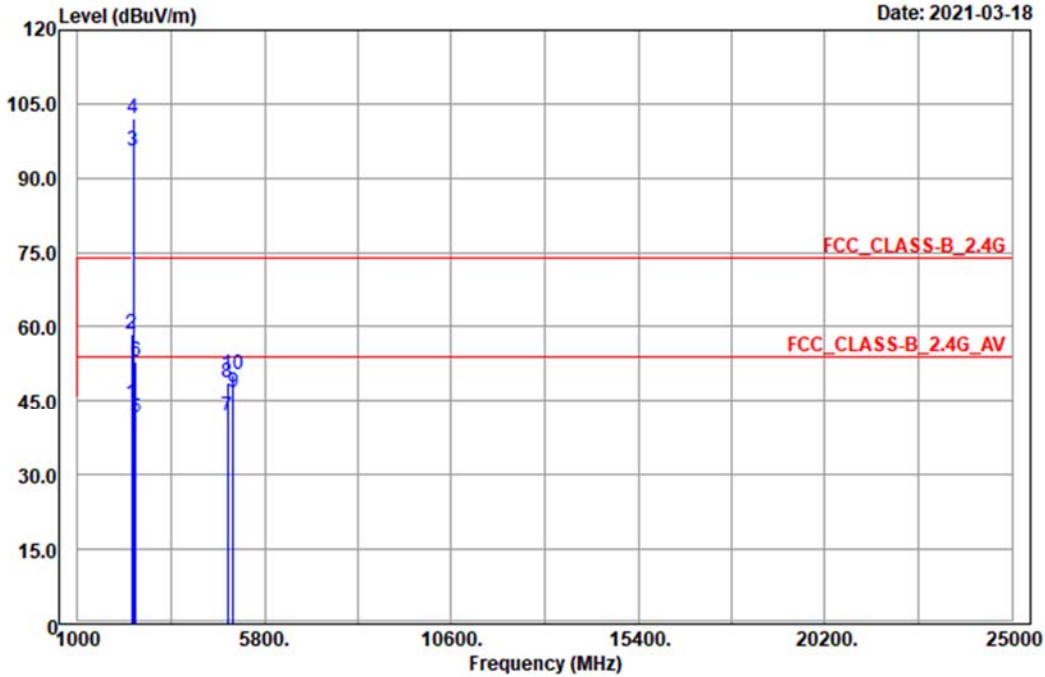
802.11n (HT40)



Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 17



Site : 966 chamber 1
 Condition: FCC_CLASS-B_2.4G 3m Horizontal
 Remark : 11N_HT40_TX_CH03
 Tested by: Charles Hsiao
 Rate : MCS0
 Power : 35/35
 RB/VB : 1 MHz / 10 Hz

	Freq	Level	Read Level	Factor	Limit	Over Limit	APos	TPos	Remark
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg	
1	2390.00	44.41	39.91	4.50	54.00	-9.59	236	282	Average
2	pk 2390.00	58.59	54.09	4.50	74.00	-15.41	236	282	Peak
3	2422.00	95.33	90.77	4.56	-----	-----	236	282	Average
4	2422.00	102.00	97.44	4.56	-----	-----	236	282	Peak
5	2483.50	41.43	36.77	4.66	54.00	-12.57	236	282	Average
6	2483.50	52.81	48.15	4.66	74.00	-21.19	236	282	Peak
7	4844.00	41.71	31.48	10.23	54.00	-12.29	119	163	Average
8	4844.00	48.75	38.52	10.23	74.00	-25.25	119	163	Peak
9	pp 5000.00	46.77	36.18	10.59	54.00	-7.23	197	125	Average
10	5000.00	50.24	39.65	10.59	74.00	-23.76	197	125	Peak

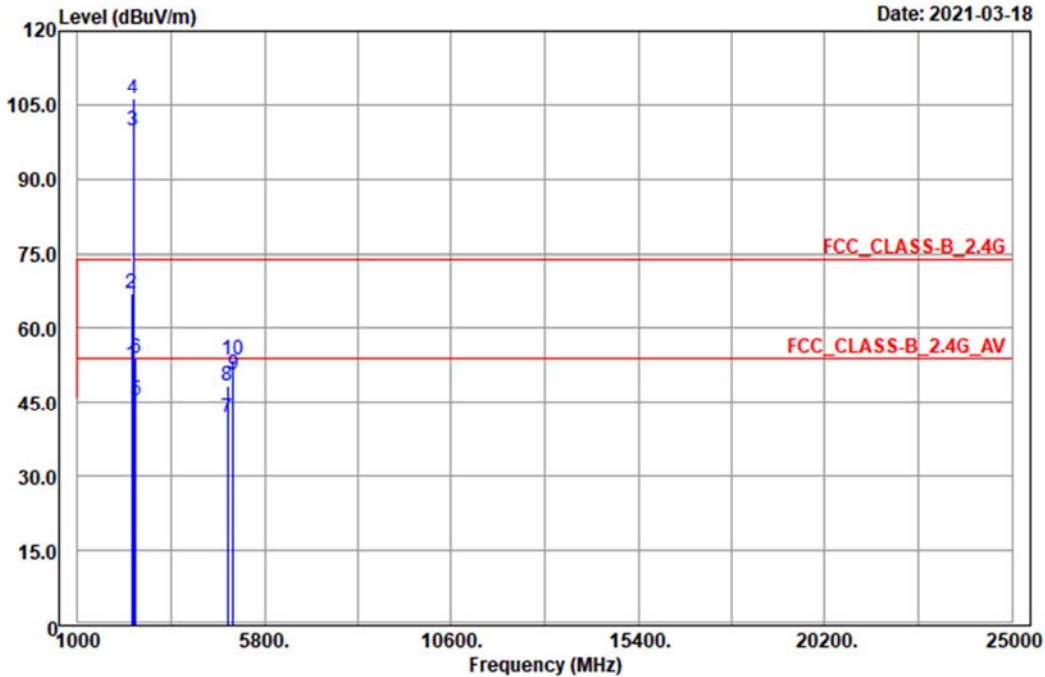
Remarks:

1. Level(dBuV/m) = Read Level(dBuV) + Factor(dB/m)
2. 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. Over limit = Level – Limit value
5. The emission levels of other frequencies were very low against the limit.



A D T

Data: 18



Site : 966 chamber 1
 Condition: FCC_CLASS-B_2.4G 3m Vertical
 Remark : 11N_HT40_TX_CH03
 Tested by: Charles Hsiao
 Rate : MCS0
 Power : 35/35
 RB/VB : 1 MHz / 10 Hz

	Freq	Level	Read Level	Factor	Limit Line	Over Limit	APos	TPos	Remark
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg	
1 pp	2390.00	52.73	48.23	4.50	54.00	-1.27	161	102	Average
2 pk	2390.00	67.14	62.64	4.50	74.00	-6.86	161	102	Peak
3	2422.00	99.85	95.29	4.56	-----	-----	145	99	Average
4	2422.00	106.14	101.58	4.56	-----	-----	145	99	Peak
5	2483.50	45.31	40.65	4.66	54.00	-8.69	145	99	Average
6	2483.50	54.03	49.37	4.66	74.00	-19.97	145	99	Peak
7	4844.00	41.88	31.65	10.23	54.00	-12.12	138	195	Average
8	4844.00	48.25	38.02	10.23	74.00	-25.75	138	195	Peak
9	5000.00	50.74	40.15	10.59	54.00	-3.26	211	48	Average
10	5000.00	53.50	42.91	10.59	74.00	-20.50	211	48	Peak

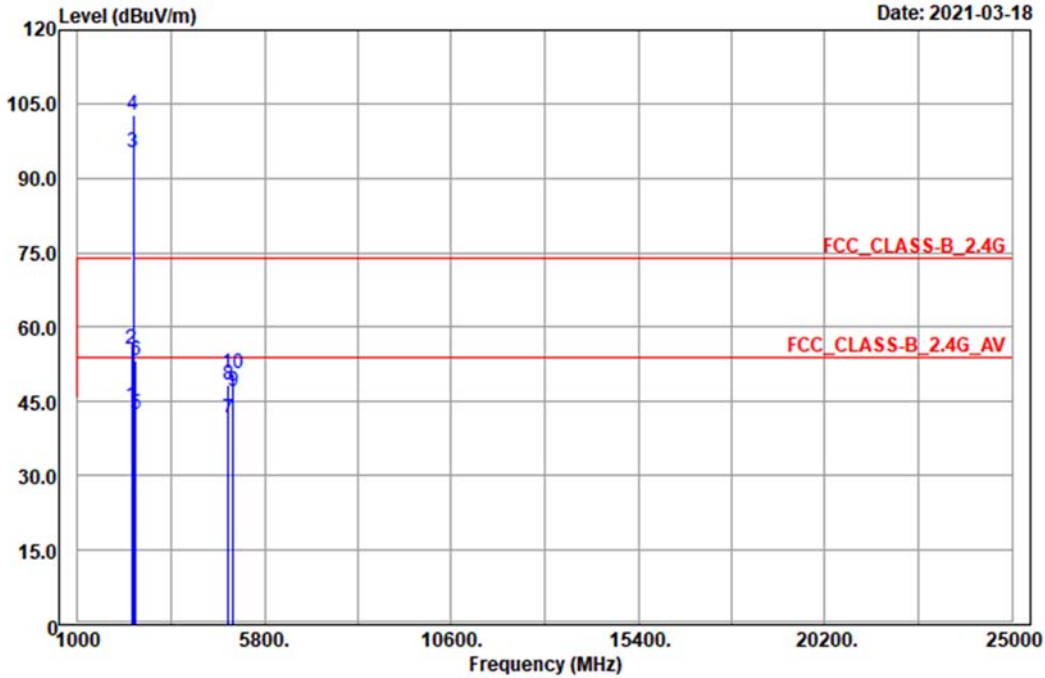
Remarks:

1. Level(dBuV/m) = Read Level(dBuV) + Factor(dB/m)
2. 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. Over limit = Level – Limit value
5. The emission levels of other frequencies were very low against the limit.



A D T

Data: 17



Site : 966 chamber 1
 Condition: FCC_CLASS-B_2.4G 3m Horizontal
 Remark : 11N_HT40_TX_CH06
 Tested by: Charles Hsiao
 Rate : MCS0
 Power : 40/40
 RB/VB : 1 MHz / 10 Hz

	Freq	Level	Read Level	Factor	Limit	Over	Apos	TPos	Remark
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg	
1	2390.00	44.29	39.79	4.50	54.00	-9.71	290	259	Average
2 pk	2390.00	55.53	51.03	4.50	74.00	-18.47	290	259	Peak
3	2437.00	95.29	90.70	4.59	-----	-----	290	259	Average
4	2437.00	102.63	98.04	4.59	-----	-----	290	259	Peak
5	2483.50	42.60	37.94	4.66	54.00	-11.40	290	259	Average
6	2483.50	53.42	48.76	4.66	74.00	-20.58	290	259	Peak
7	4874.00	41.60	31.39	10.21	54.00	-12.40	124	208	Average
8	4874.00	48.52	38.31	10.21	74.00	-25.48	124	208	Peak
9 pp	5000.00	46.94	36.35	10.59	54.00	-7.06	197	125	Average
10	5000.00	50.79	40.20	10.59	74.00	-23.21	197	125	Peak

Remarks:

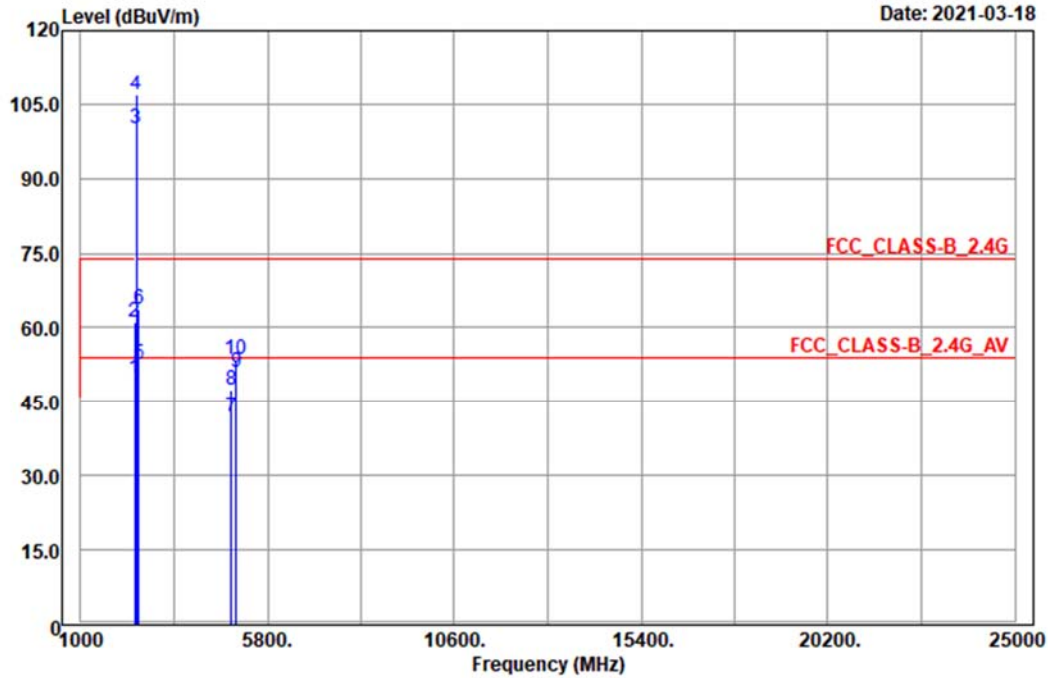
1. Level(dBuV/m) = Read Level(dBuV) + Factor(dB/m)
2. Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Over limit = Level – Limit value
5. The emission levels of other frequencies were very low against the limit.



A D T

Data: 18

Date: 2021-03-18



Site : 966 chamber 1
 Condition: FCC_CLASS-B_2.4G 3m Vertical
 Remark : 11N_HT40_TX_CH06
 Tested by: Charles Hsiao
 Rate : MCS0
 Power : 40/40
 RB/VB : 1 MHz / 10 Hz

	Freq	Level	Read Level	Factor	Limit Line	Over Limit	APos	TPos	Remark
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg	
1	2390.00	49.86	45.36	4.50	54.00	-4.14	264	276	Average
2	2390.00	61.12	56.62	4.50	74.00	-12.88	264	276	Peak
3	2437.00	100.14	95.55	4.59	-----	-----	264	0	Average
4	2437.00	107.00	102.41	4.59	-----	-----	264	0	Peak
5 pp	2483.50	52.73	48.07	4.66	54.00	-1.27	196	4	Average
6 pk	2483.50	63.72	59.06	4.66	74.00	-10.28	196	4	Peak
7	4874.00	41.71	31.50	10.21	54.00	-12.29	174	45	Average
8	4874.00	47.46	37.25	10.21	74.00	-26.54	174	45	Peak
9	5000.00	50.86	40.27	10.59	54.00	-3.14	211	48	Average
10	5000.00	53.58	42.99	10.59	74.00	-20.42	211	48	Peak

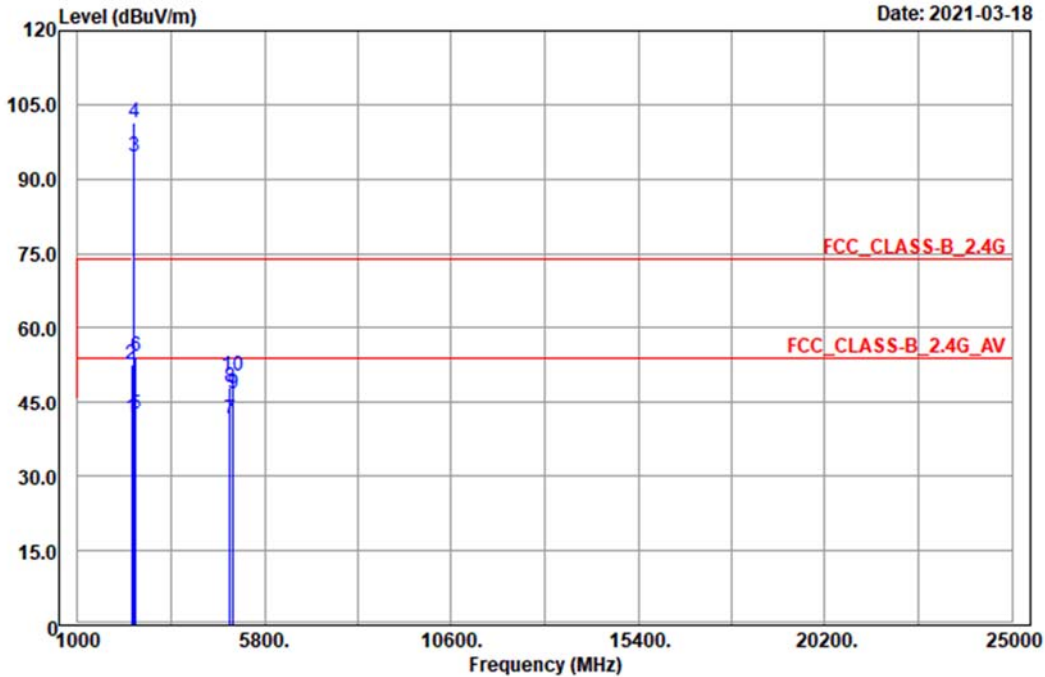
Remarks:

1. Level(dBuV/m) = Read Level(dBuV) + Factor(dB/m)
2. 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. Over limit = Level – Limit value
5. The emission levels of other frequencies were very low against the limit.



A D T

Data: 17



Date: 2021-03-18

Site : 966 chamber 1
 Condition: FCC_CLASS-B_2.4G 3m Horizontal
 Remark : 11N_HT40_TX_CH09
 Tested by: Charles Hsiao
 Rate : MCS0
 Power : 36/36
 RB/VB : 1 MHz / 10 Hz

	Freq	Level	Read Level	Factor	Limit	Over Limit	APos	TPos	Remark
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg	
1	2390.00	41.88	37.38	4.50	54.00	-12.12	290	259	Average
2	2390.00	52.79	48.29	4.50	74.00	-21.21	290	259	Peak
3	2452.00	94.47	89.87	4.60	-----	-----	290	259	Average
4	2452.00	101.31	96.71	4.60	-----	-----	290	259	Peak
5	2483.50	42.59	37.93	4.66	54.00	-11.41	290	259	Average
6 pk	2483.50	54.14	49.48	4.66	74.00	-19.86	290	259	Peak
7	4904.00	41.55	31.41	10.14	54.00	-12.45	128	8	Average
8	4904.00	48.18	38.04	10.14	74.00	-25.82	128	8	Peak
9 pp	5000.00	46.68	36.09	10.59	54.00	-7.32	197	125	Average
10	5000.00	50.51	39.92	10.59	74.00	-23.49	197	125	Peak

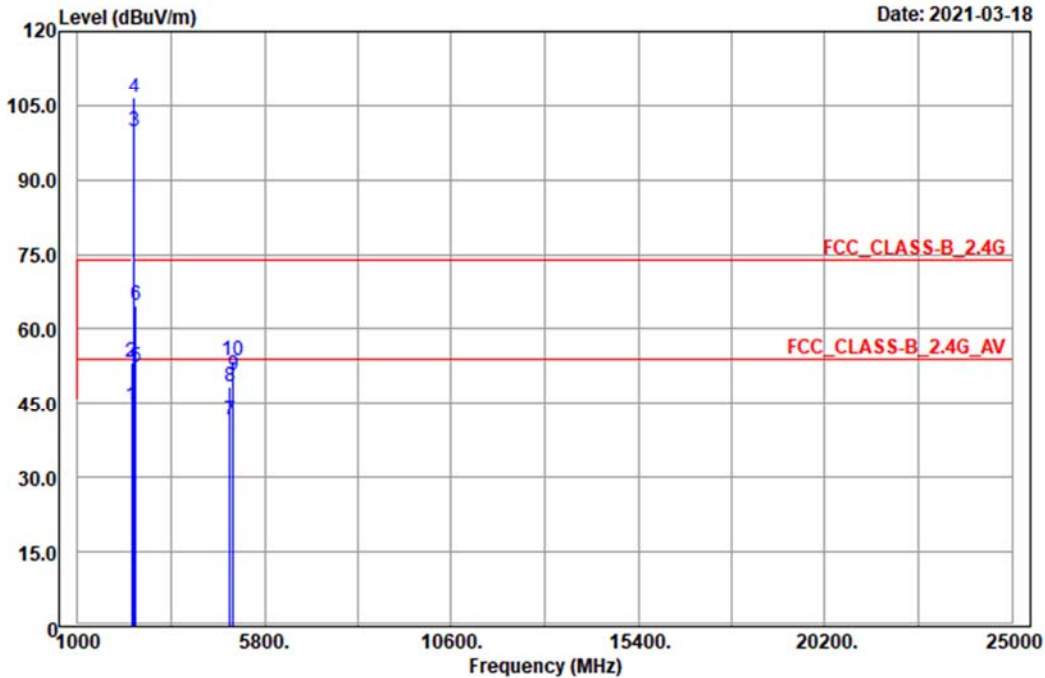
Remarks:

1. Level(dBuV/m) = Read Level(dBuV) + Factor(dB/m)
2. 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. Over limit = Level – Limit value
5. The emission levels of other frequencies were very low against the limit.



A D T

Data: 18



Site : 966 chamber 1
 Condition: FCC_CLASS-B_2.4G 3m Vertical
 Remark : 11N_HT40_TX_CH09
 Tested by: Charles Hsiao
 Rate : MCS0
 Power : 36/36
 RB/VB : 1 MHz / 10 Hz

	Freq	Level	Read Level	Factor	Limit Line	Over Limit	APos	TPos	Remark
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg	
1	2390.00	44.39	39.89	4.50	54.00	-9.61	127	90	Average
2	2390.00	53.35	48.85	4.50	74.00	-20.65	127	90	Peak
3	2452.00	99.64	95.04	4.60	-----	-----	127	90	Average
4	2452.00	106.50	101.90	4.60	-----	-----	127	90	Peak
5 pp	2483.50	52.46	47.80	4.66	54.00	-1.54	135	221	Average
6 pk	2483.50	64.68	60.02	4.66	74.00	-9.32	135	221	Peak
7	4904.00	41.65	31.51	10.14	54.00	-12.35	127	7	Average
8	4904.00	48.51	38.37	10.14	74.00	-25.49	127	7	Peak
9	5000.00	50.78	40.19	10.59	54.00	-3.22	211	48	Average
10	5000.00	53.71	43.12	10.59	74.00	-20.29	211	48	Peak

Remarks:

1. Level(dBuV/m) = Read Level(dBuV) + Factor(dB/m)
2. 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. Over limit = Level – Limit value
5. The emission levels of other frequencies were very low against the limit.

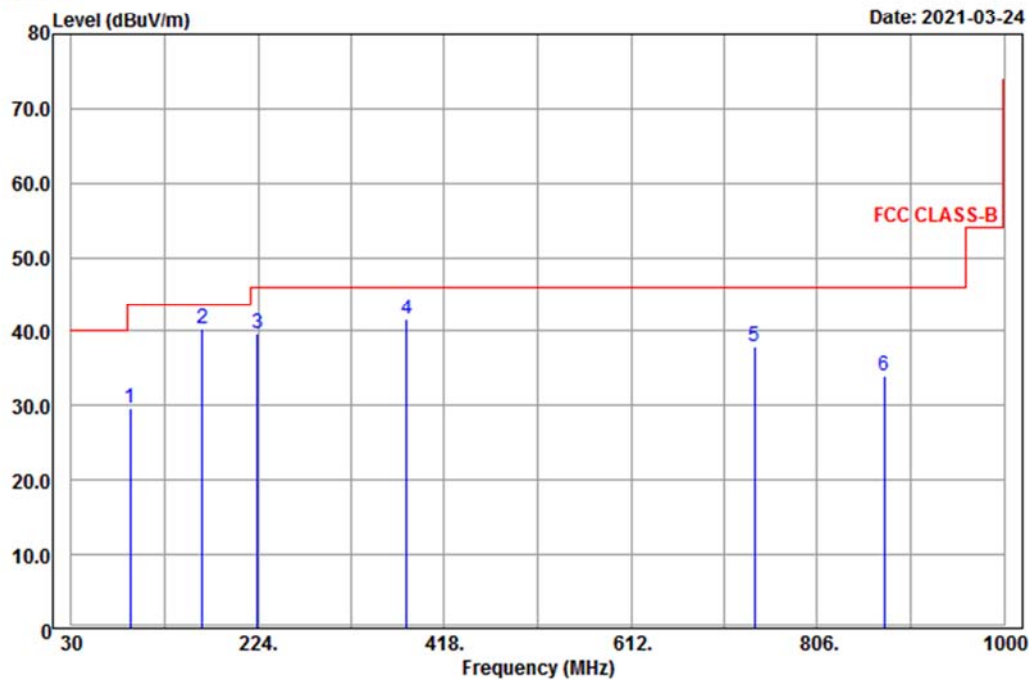
Below 1GHz worst-case data:
 802.11b_Ch 6



Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 5



Site : 966 chamber 1
 Condition: FCC CLASS-B 3m Horizontal
 Remark : WIFI_2.4G_TX_LF
 Tested by: Karl Lee

	Freq	Level	Read	Limit	Over	APos	TPos	Remark
	MHz	dBuV/m	Level	Factor	Line	Limit	cm	deg
			dBuV	dB/m	dBuV/m	dB		
1	91.29	29.58	48.38	-18.80	43.50	-13.92	117	161 Peak
2	166.08	40.38	60.81	-20.43	43.50	-3.12	120	193 Peak
3	223.32	39.74	57.45	-17.71	46.00	-6.26	192	351 Peak
4	379.10	41.53	55.80	-14.27	46.00	-4.47	102	176 Peak
5	741.00	37.97	46.51	-8.54	46.00	-8.03	149	174 Peak
6	875.40	34.00	40.26	-6.26	46.00	-12.00	136	83 Peak

Remarks:

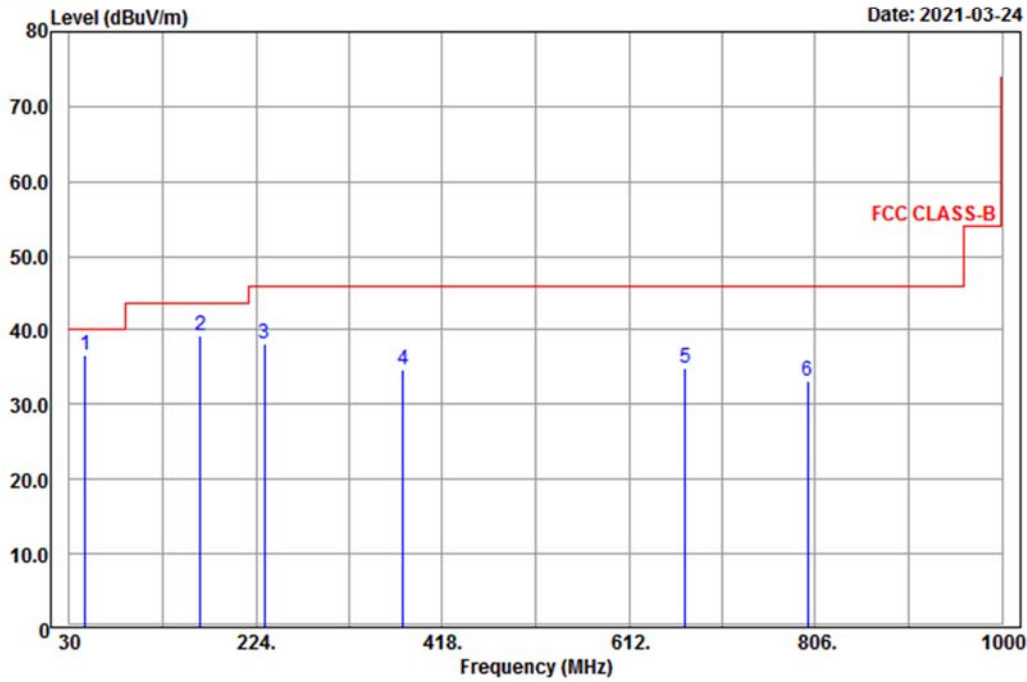
- Level = Read Level + Factor
 Margin value = level – Limit value.
- The emission levels of other frequencies were very low against the limit.



Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 6



Site : 966 chamber 1
 Condition: FCC CLASS-B 3m Vertical
 Remark : WIFI_2.4G_TX_LF
 Tested by: Karl Lee

	Freq	Level	Read Level	Factor	Limit Line	Over Limit	APos	TPos	Remark
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg	
1	pp	46.20	36.61	51.86	-15.25	40.00	-3.39	283	156 Peak
2		166.08	39.21	59.64	-20.43	43.50	-4.29	172	144 Peak
3		232.50	38.21	55.51	-17.30	46.00	-7.79	139	352 Peak
4		377.00	34.77	49.06	-14.29	46.00	-11.23	151	170 Peak
5		670.30	34.97	44.60	-9.63	46.00	-11.03	209	143 Peak
6		798.40	33.10	40.73	-7.63	46.00	-12.90	135	171 Peak

Remarks:

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

4.2 Conducted Emission Measurement

4.2.1 Limits of Conducted Emission Measurement

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

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

4.2.2 Test Instruments

Description & Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Due
Test Receiver ROHDE & SCHWARZ	ESR3	102783	Dec. 21, 2020	Dec. 20, 2021
RF signal cable (with 10dB PAD) Woken	5D-FB	Cable-cond2-01	Sep. 04, 2020	Sep. 03, 2021
V-LISN SCHWARZBECK (EUT)	NNBL 8226-2	8226-142	Jul. 31, 2020	Jul. 30, 2021
LISN ROHDE & SCHWARZ (Peripheral)	ESH3-Z5	100312	Aug. 18, 2020	Aug. 17, 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

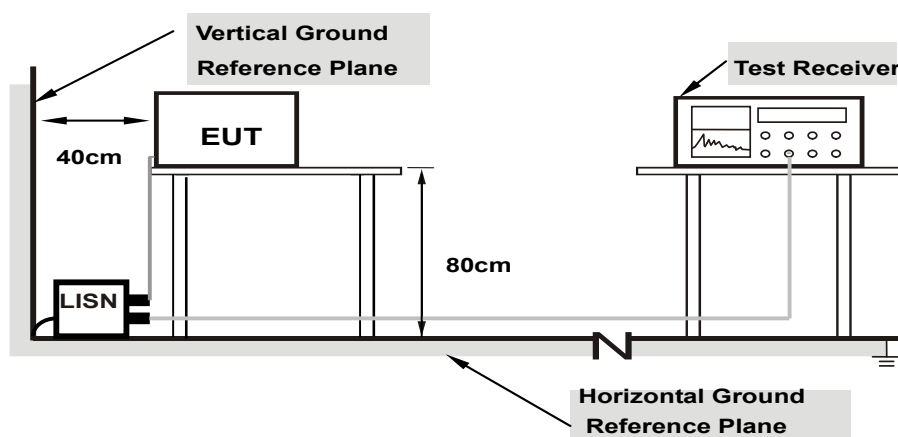
- The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling impedance 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

Same as 4.1.6.

4.2.7 Test Results

Worst-case data:

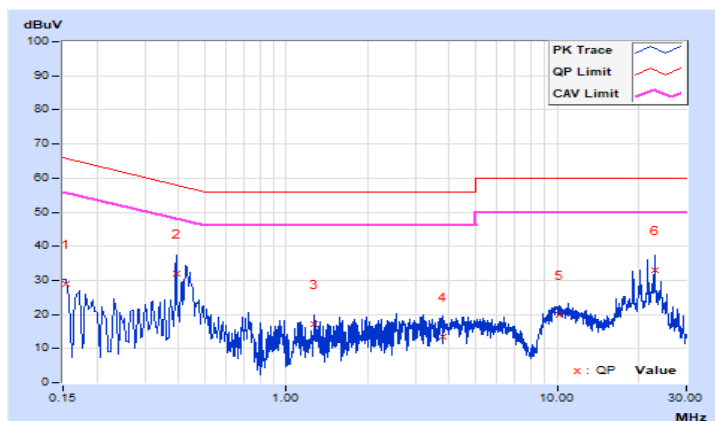
802.11b

Frequency Range	150kHz ~ 30MHz	Detector Function & Resolution Bandwidth	Quasi-Peak (QP) / Average (AV), 9kHz
Input Power	120Vac, 60Hz	Environmental Conditions	23°C, 66%RH
Tested by	Cookie Ku	Test Date	2021/6/4

Phase Of Power : Line (L)										
No	Frequency (MHz)	Correction Factor (dB)	Reading Value (dBuV)		Emission Level (dBuV)		Limit (dBuV)		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15391	0.11	28.74	12.09	28.85	12.20	65.79	55.79	-36.94	-43.59
2	0.39242	0.14	31.81	14.51	31.95	14.65	58.01	48.01	-26.06	-33.36
3	1.27217	0.19	17.02	8.48	17.21	8.67	56.00	46.00	-38.79	-37.33
4	3.78630	0.26	13.25	3.72	13.51	3.98	56.00	46.00	-42.49	-42.02
5	10.12441	0.36	19.63	8.40	19.99	8.76	60.00	50.00	-40.01	-41.24
6	22.87492	0.43	32.72	19.15	33.15	19.58	60.00	50.00	-26.85	-30.42

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

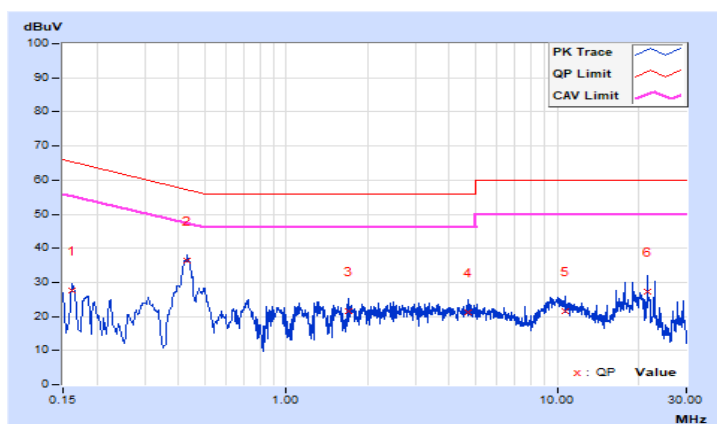


Frequency Range	150kHz ~ 30MHz	Detector Function & Resolution Bandwidth	Quasi-Peak (QP) / Average (AV), 9kHz
Input Power	120Vac, 60Hz	Environmental Conditions	23°C, 66%RH
Tested by	Cookie Ku	Test Date	2021/6/4

Phase Of Power : Neutral (N)										
No	Frequency (MHz)	Correction Factor (dB)	Reading Value (dBuV)		Emission Level (dBuV)		Limit (dBuV)		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.16173	0.12	27.36	19.84	27.48	19.96	65.37	55.37	-37.89	-35.41
2	0.43152	0.15	36.24	30.65	36.39	30.80	57.22	47.22	-20.83	-16.42
3	1.70227	0.22	21.27	14.75	21.49	14.97	56.00	46.00	-34.51	-31.03
4	4.68560	0.33	21.03	12.79	21.36	13.12	56.00	46.00	-34.64	-32.88
5	10.66399	0.47	21.18	12.90	21.65	13.37	60.00	50.00	-38.35	-36.63
6	21.59244	0.66	26.72	16.95	27.38	17.61	60.00	50.00	-32.62	-32.39

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

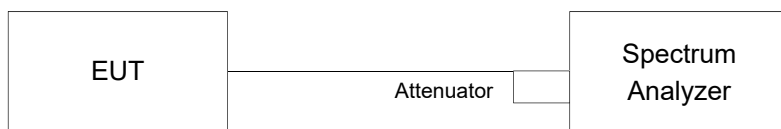


4.3 6dB Bandwidth Measurement

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

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

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	10.12	10.13	0.5	Pass
6	2437	10.17	10.17	0.5	Pass
11	2462	10.17	10.15	0.5	Pass

802.11g

Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
1	2412	16.61	16.62	0.5	Pass
6	2437	16.57	16.56	0.5	Pass
11	2462	16.60	16.60	0.5	Pass

802.11n (HT20)

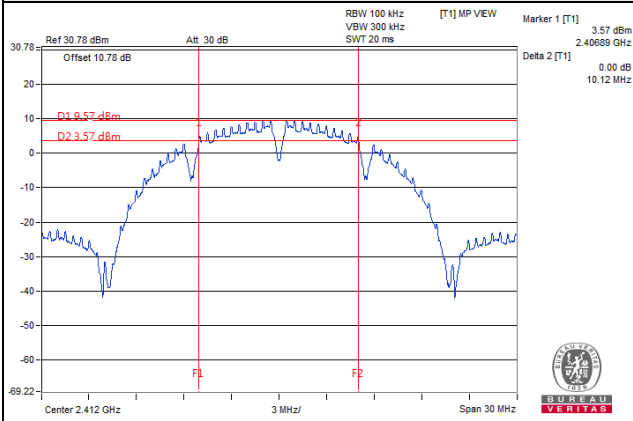
Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
1	2412	17.76	17.81	0.5	Pass
6	2437	17.89	17.80	0.5	Pass
11	2462	17.76	17.80	0.5	Pass

802.11n (HT40)

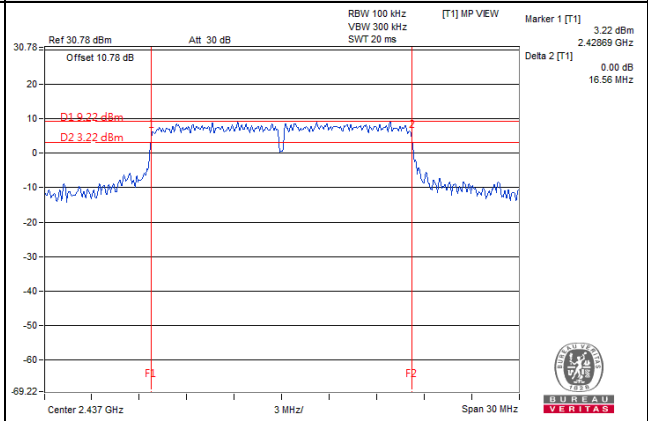
Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
3	2422	36.52	36.52	0.5	Pass
6	2437	36.52	36.51	0.5	Pass
9	2452	36.51	36.55	0.5	Pass

Spectrum Plot of Worst Value

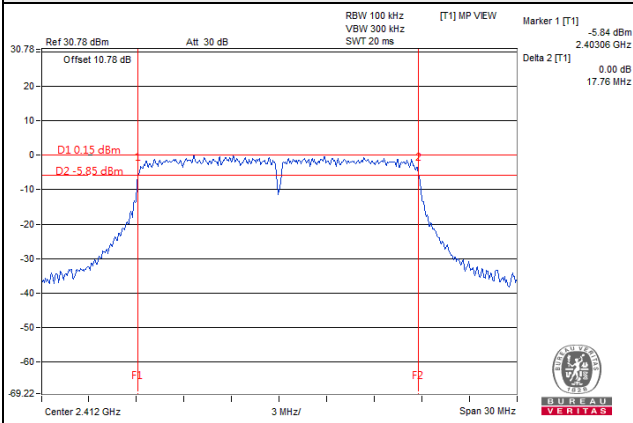
802.11b



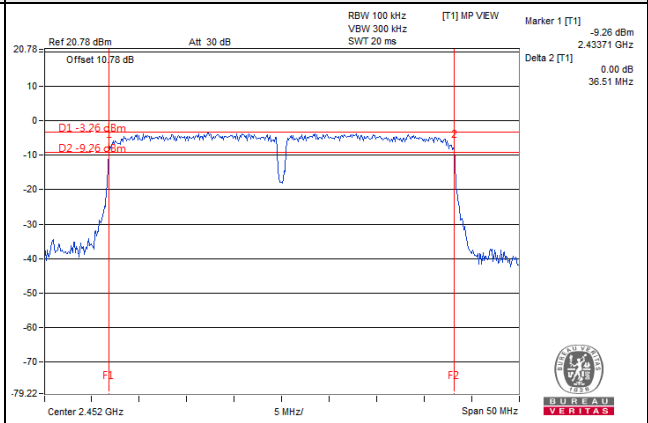
802.11g



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,

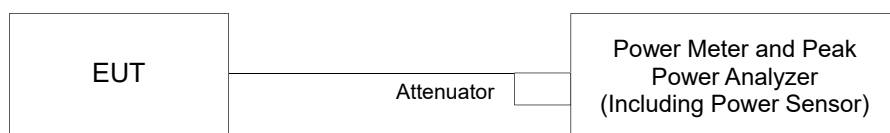
Array Gain = 0 dB (i.e., no array gain) for $N_{ANT} \leq 4$;

Array Gain = 0 dB (i.e., no array gain) for channel widths ≥ 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

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

CDD Mode

802.11b

Channel	Frequency (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
1	2412	19.61	19.55	181.568	22.59	30	Pass
6	2437	24.21	24.15	523.649	27.19	30	Pass
11	2462	20.05	19.85	197.763	22.96	30	Pass

802.11g

Channel	Frequency (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
1	2412	14.15	13.84	50.212	17.01	30	Pass
6	2437	23.46	23.16	428.834	26.32	30	Pass
11	2462	15.61	15.41	71.145	18.52	30	Pass

802.11n (HT20)

Channel	Frequency (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
1	2412	14.91	14.55	59.484	17.74	30	Pass
6	2437	23.42	23.14	425.849	26.29	30	Pass
11	2462	15.20	14.89	63.945	18.06	30	Pass

802.11n (HT40)

Channel	Frequency (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
3	2422	13.87	13.77	48.201	16.83	30	Pass
6	2437	15.72	14.93	68.442	18.35	30	Pass
9	2452	14.22	13.75	50.138	17.00	30	Pass

Beamforming Mode

802.11n (HT20)

Channel	Frequency (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
1	2412	11.90	11.54	29.744	14.73	30	Pass
6	2437	20.41	20.13	212.939	23.28	30	Pass
11	2462	12.19	11.88	31.975	15.05	30	Pass

Note: Directional gain = $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2/2] = 5.45\text{dBi} < 6\text{dBi}$, so the limit no need to reduced.

802.11n (HT40)

Channel	Frequency (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
3	2422	10.86	10.76	24.102	13.82	30	Pass
6	2437	12.71	11.92	34.223	15.34	30	Pass
9	2452	11.21	10.74	25.071	13.99	30	Pass

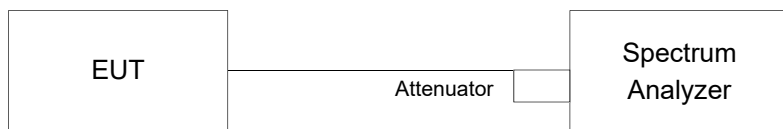
Note: Directional gain = $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2/2] = 5.45\text{dBi} < 6\text{dBi}$, so the limit no need to reduced.

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

For Average Power (Duty cycle $\geq 98\%$)

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

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	Freq. (MHz)	PSD (dBm/3kHz)	10 log (N=2) dB	Total PSD (dBm/3kHz)	Limit (dBm/3kHz)	Pass /Fail
0	1	2412	-12.81	3.01	-9.80	8.00	Pass
	6	2437	-8.78	3.01	-5.77	8.00	Pass
	11	2462	-12.86	3.01	-9.85	8.00	Pass
1	1	2412	-12.76	3.01	-9.75	8.00	Pass
	6	2437	-8.63	3.01	-5.62	8.00	Pass
	11	2462	-12.95	3.01	-9.94	8.00	Pass

Note:

1. Method E) 2) c) of power density measurement of KDB 662911 is using for calculating total power density.
2. Directional Gain = $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2/2] = 5.45\text{dBi} < 6\text{dBi}$, so the limit no need to reduced.

802.11g

TX chain	Channel	Freq. (MHz)	PSD (dBm/3kHz)	10 log (N=2) dB	Total PSD (dBm/3kHz)	Limit (dBm/3kHz)	Pass /Fail
0	1	2412	-19.30	3.01	-16.29	8.00	Pass
	6	2437	-10.07	3.01	-7.06	8.00	Pass
	11	2462	-17.32	3.01	-14.31	8.00	Pass
1	1	2412	-19.41	3.01	-16.4	8.00	Pass
	6	2437	-10.48	3.01	-7.47	8.00	Pass
	11	2462	-17.55	3.01	-14.54	8.00	Pass

Note:

1. Method E) 2) c) of power density measurement of KDB 662911 is using for calculating total power density.
2. Directional Gain = $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2/2] = 5.45\text{dBi} < 6\text{dBi}$, so the limit no need to reduced.

802.11n (HT20)

TX chain	Channel	Freq. (MHz)	PSD (dBm/3kHz)	10 log (N=2) dB	Total PSD (dBm/3kHz)	Limit (dBm/3kHz)	Pass /Fail
0	1	2412	-19.62	3.01	-16.61	8.00	Pass
	6	2437	-10.41	3.01	-7.40	8.00	Pass
	11	2462	-18.29	3.01	-15.28	8.00	Pass
1	1	2412	-18.20	3.01	-15.19	8.00	Pass
	6	2437	-9.74	3.01	-6.73	8.00	Pass
	11	2462	-16.50	3.01	-13.49	8.00	Pass

Note:

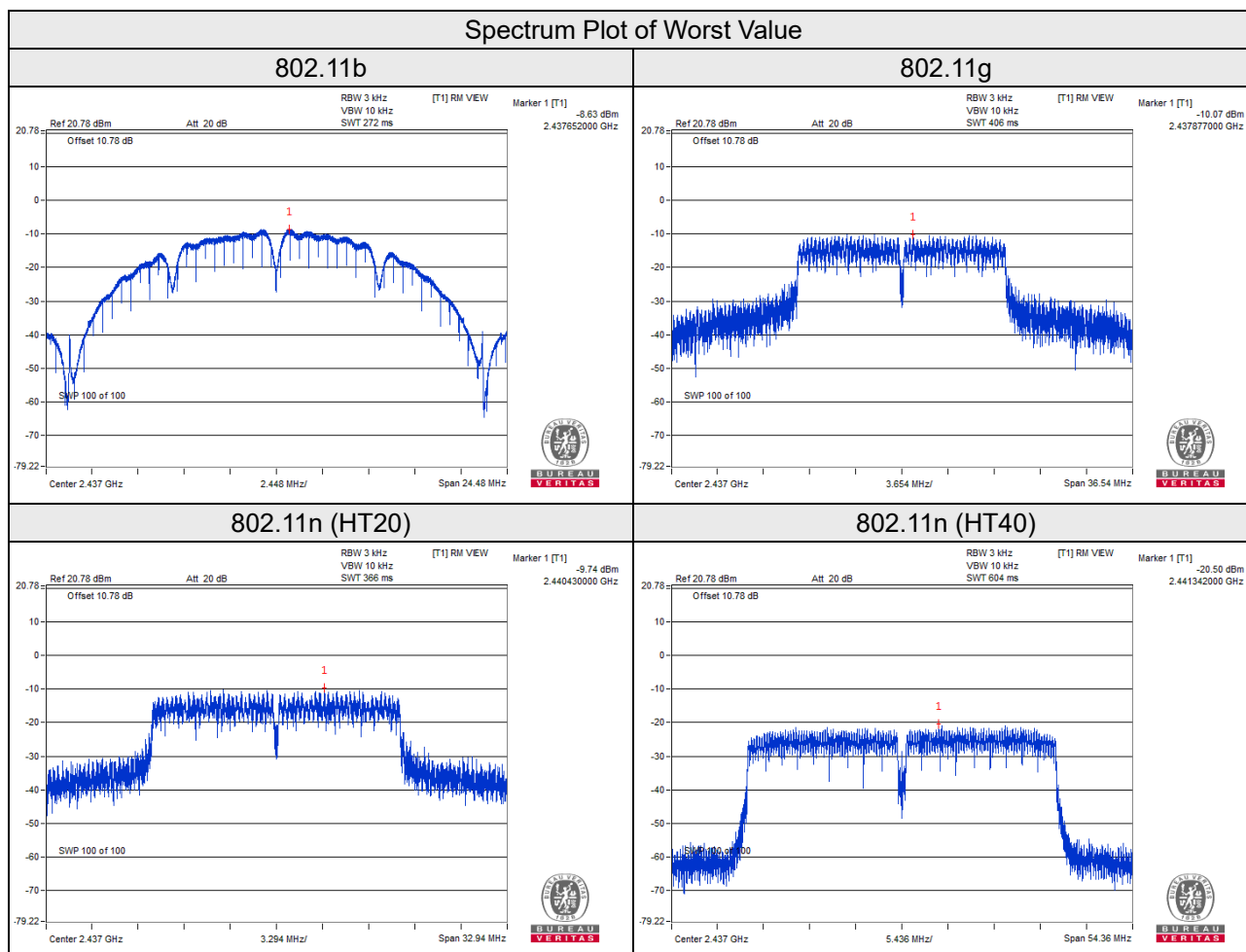
1. Method E) 2) c) of power density measurement of KDB 662911 is using for calculating total power density.
2. Directional Gain = $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2/2] = 5.45\text{dBi} < 6\text{dBi}$, so the limit no need to reduced.

802.11n (HT40)

TX chain	Channel	Freq. (MHz)	PSD (dBm/3kHz)	10 log (N=2) dB	Total PSD (dBm/3kHz)	Limit (dBm/3kHz)	Pass /Fail
0	3	2422	-23.05	3.01	-20.04	8.00	Pass
	6	2437	-20.95	3.01	-17.94	8.00	Pass
	9	2452	-22.05	3.01	-19.04	8.00	Pass
1	3	2422	-22.53	3.01	-19.52	8.00	Pass
	6	2437	-20.50	3.01	-17.49	8.00	Pass
	9	2452	-22.42	3.01	-19.41	8.00	Pass

Note:

- Method E) 2) c) of power density measurement of KDB 662911 is using for calculating total power density.
- Directional Gain = $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2/2] = 5.45\text{dBi} < 6\text{dBi}$, so the limit no need to reduced.

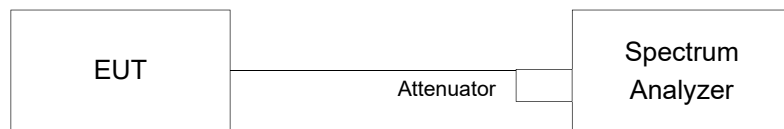


4.6 Conducted Out of Band Emission Measurement

4.6.1 Limits of Conducted Out of Band Emission Measurement

Below -30dB 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

- a. Set the RBW = 100 kHz.
- b. Set the VBW \geq 300 kHz.
- c. Detector = peak.
- d. Sweep time = auto couple.
- e. Trace mode = max hold.
- f. Allow trace to fully stabilize.
- g. Use the peak marker function to determine the maximum power level in any 100 kHz band segment within the fundamental EBW.

MEASUREMENT PROCEDURE OOB

- a. Set RBW = 100 kHz.
- b. Set VBW \geq 300 kHz.
- c. Detector = peak.
- d. Sweep = auto couple.
- e. Trace Mode = max hold.
- f. Allow trace to fully stabilize.
- g. 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

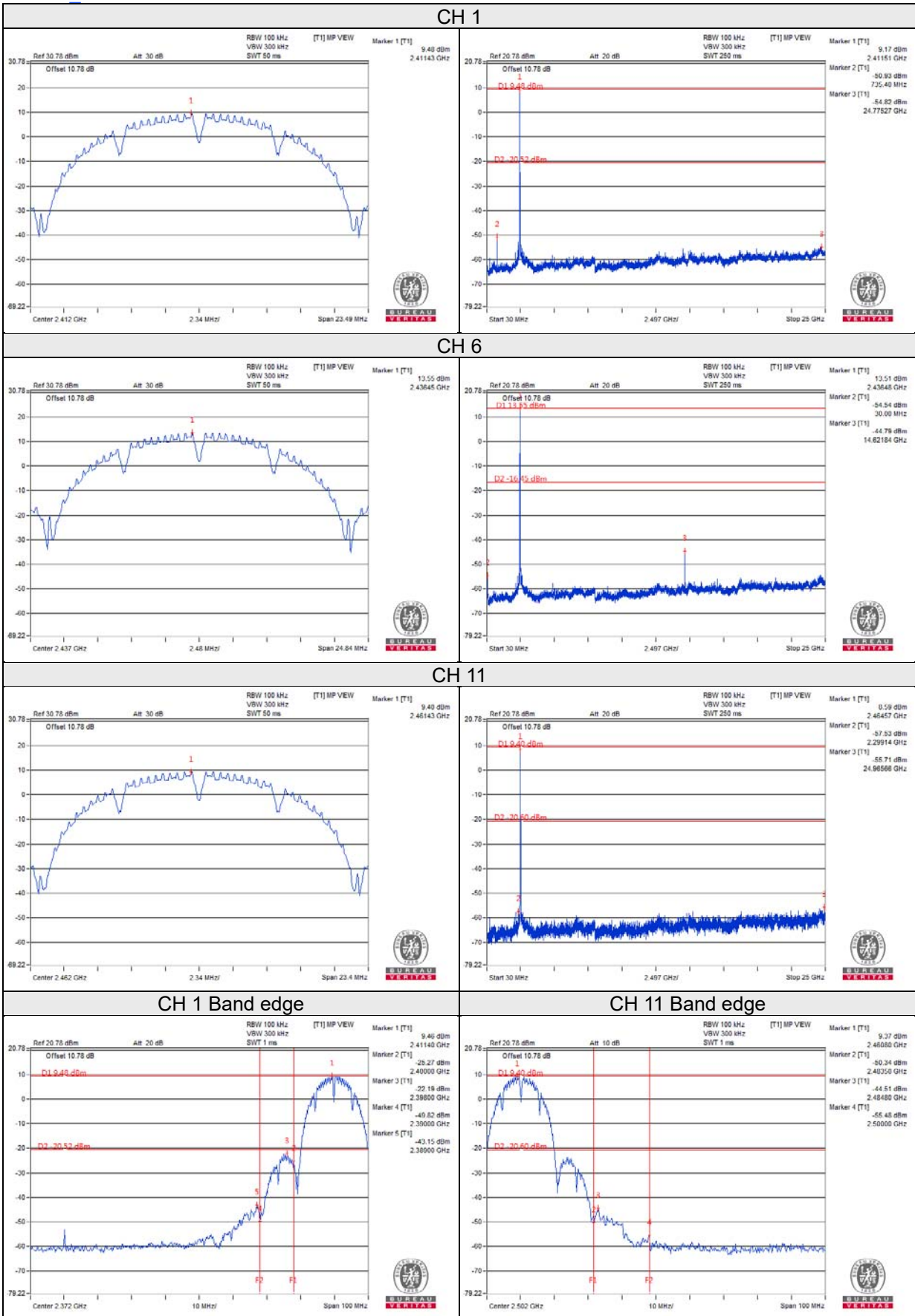
The conducted emission test is performed on each TX port of operating mode without summing or adding 10log (N) since the limit is relative emission limit.

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

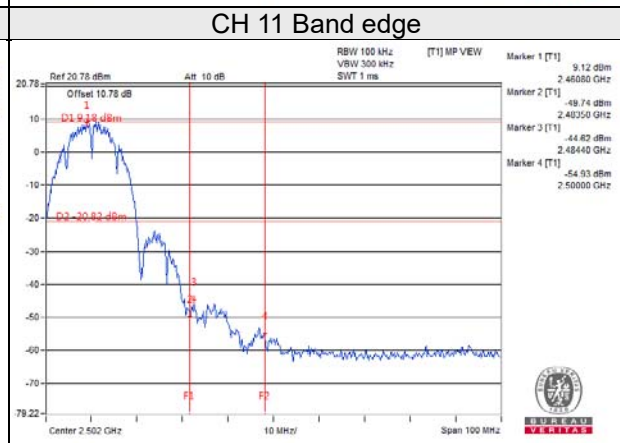
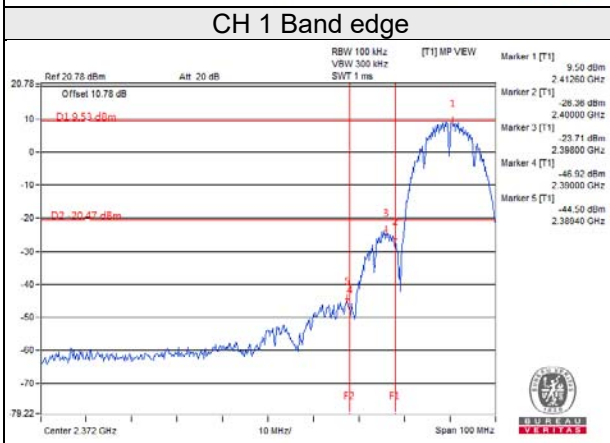
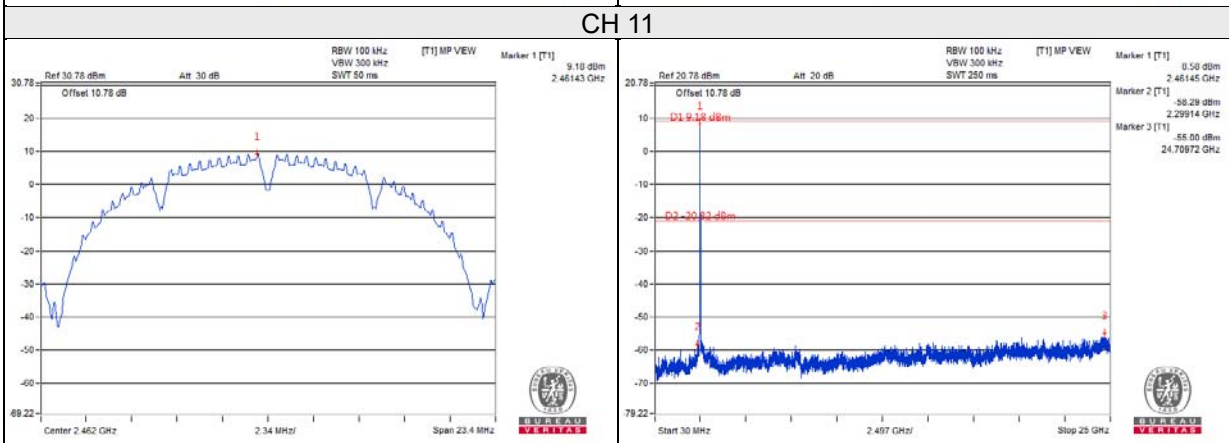
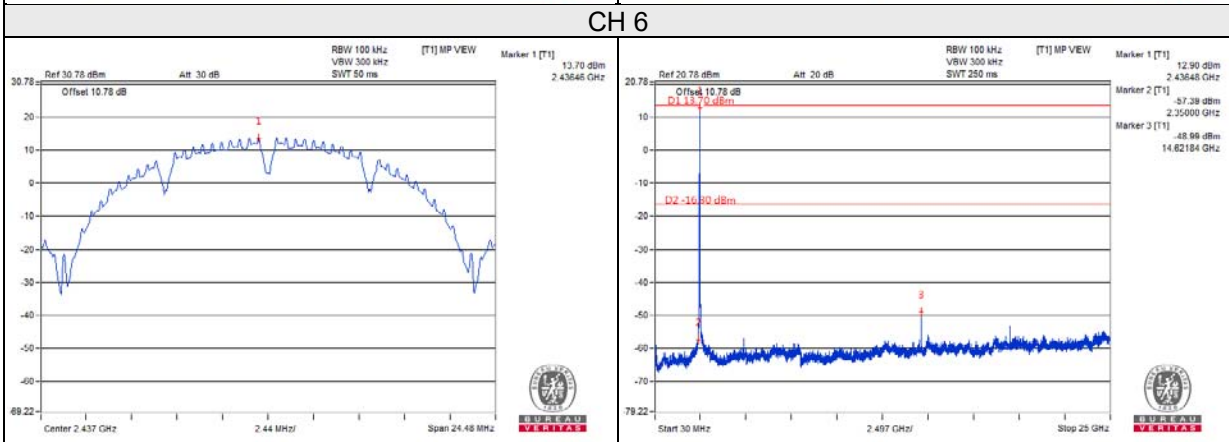
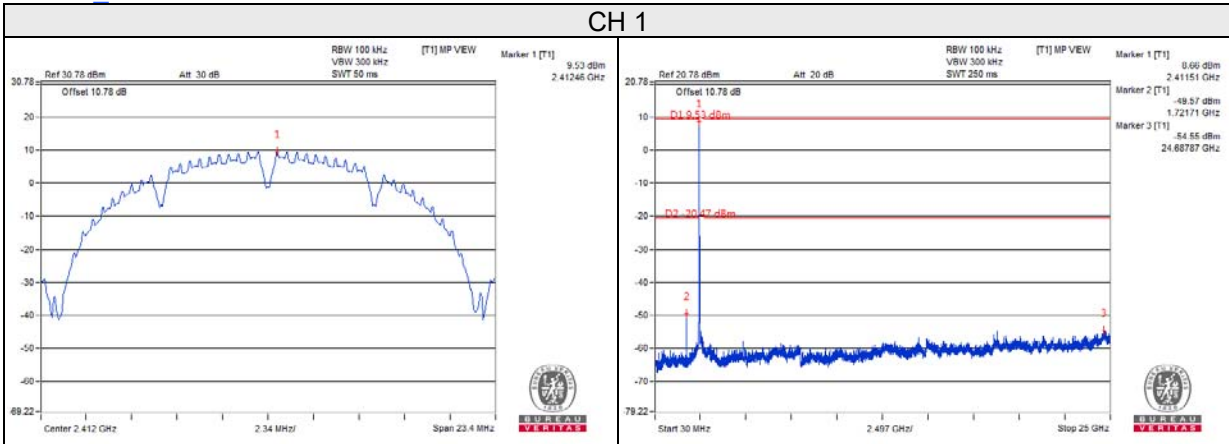


BUREAU VERITAS

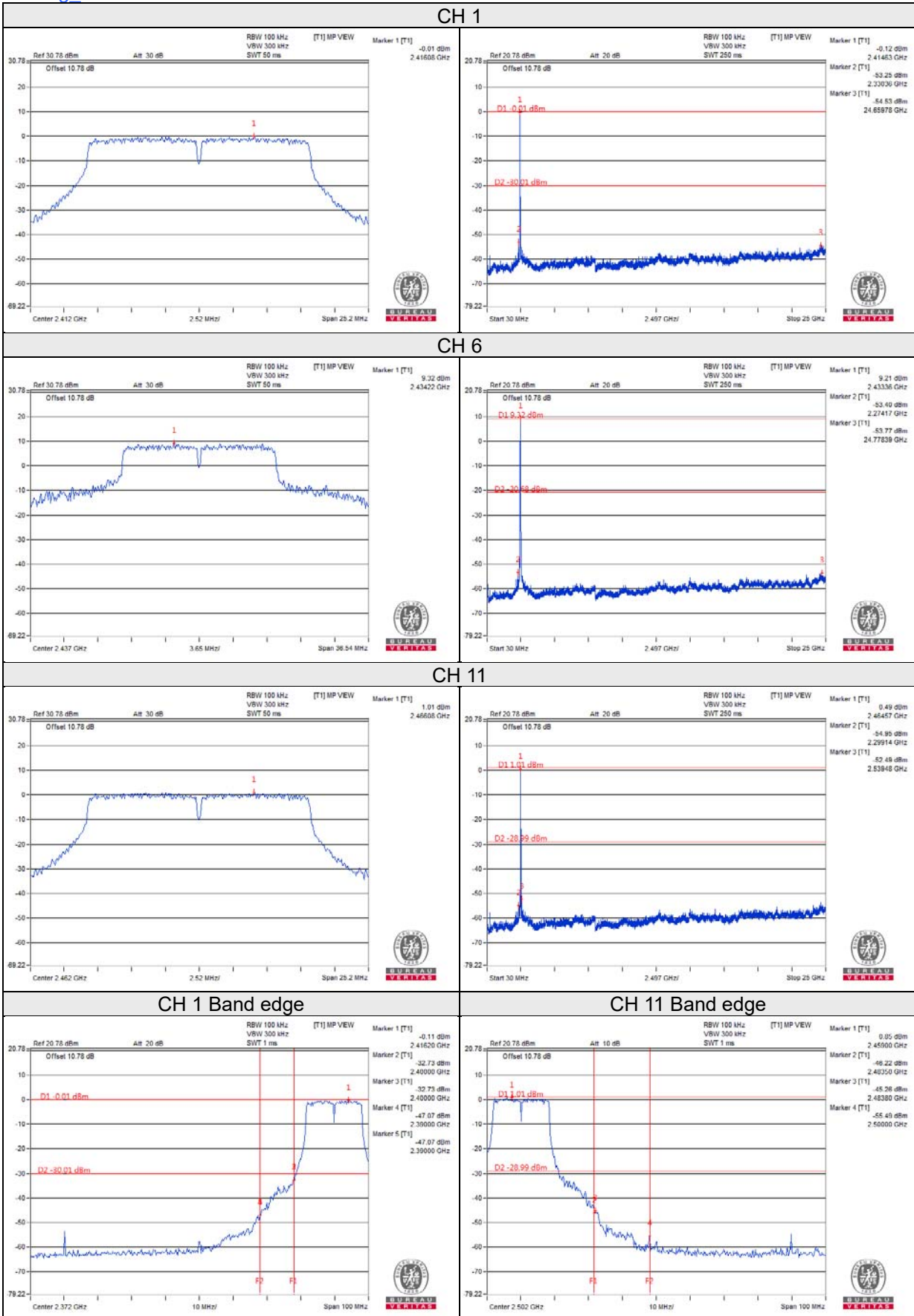
802.11b Chain 0



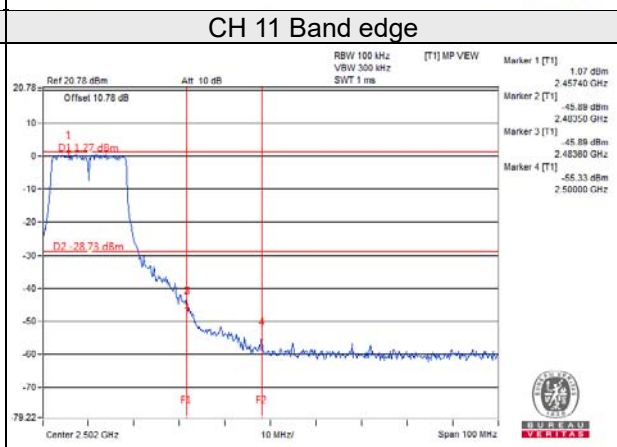
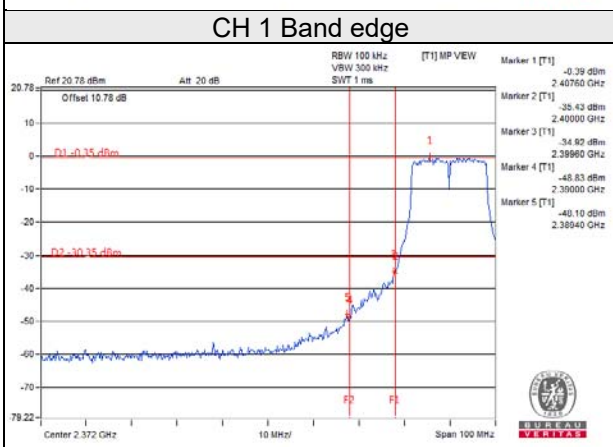
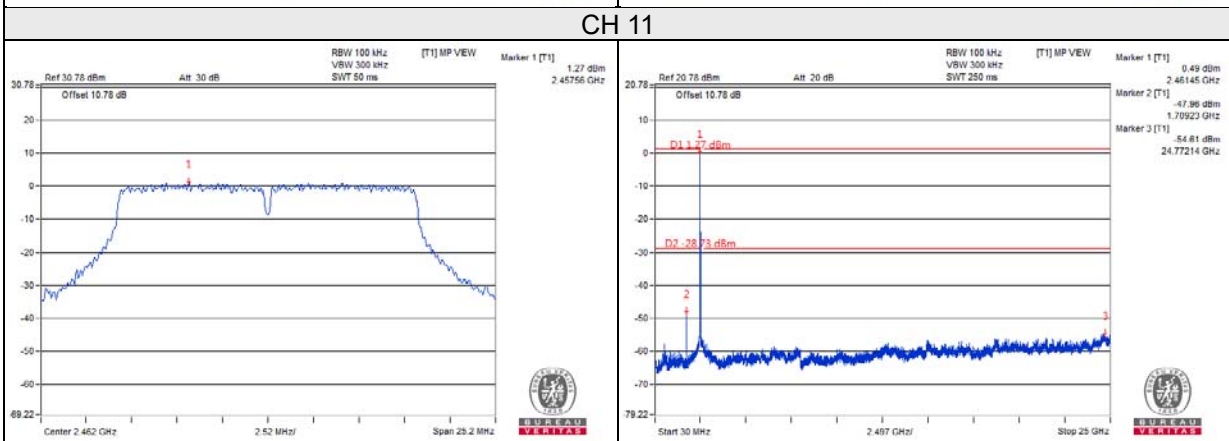
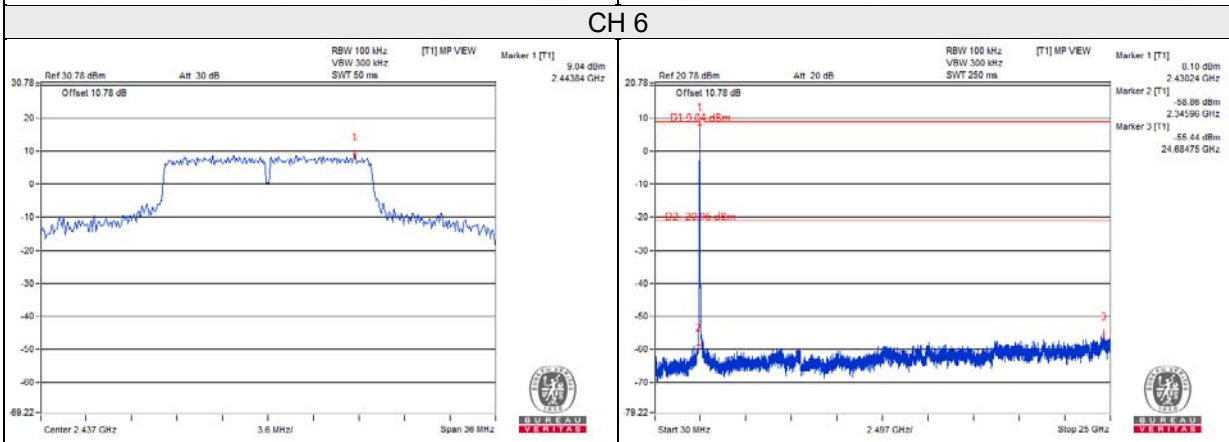
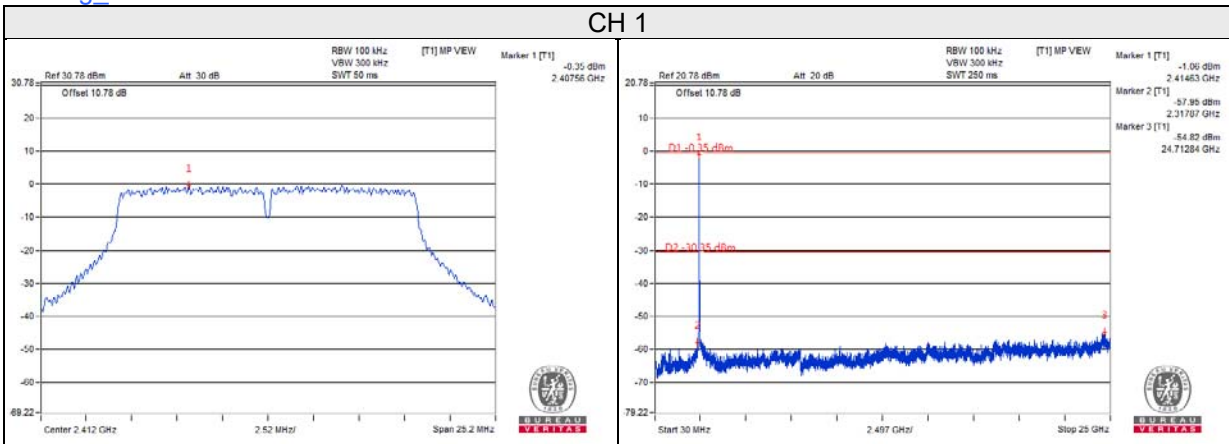
802.11b Chain 1



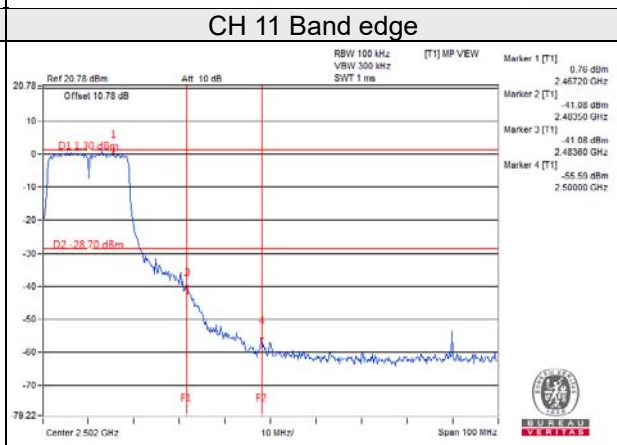
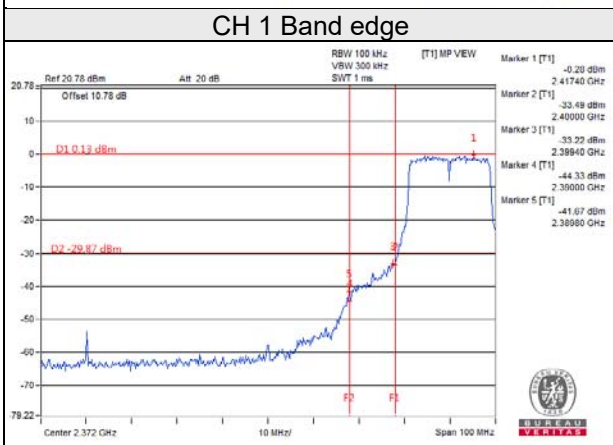
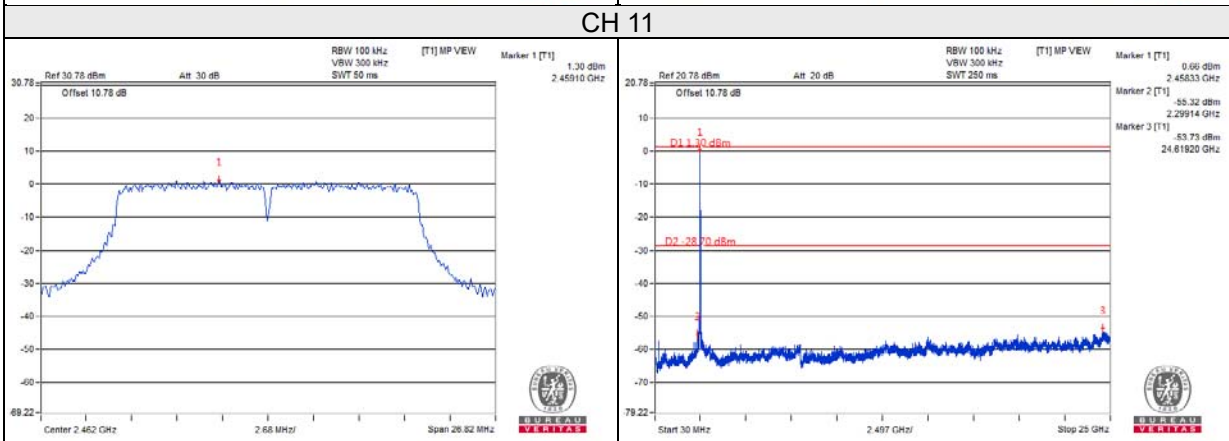
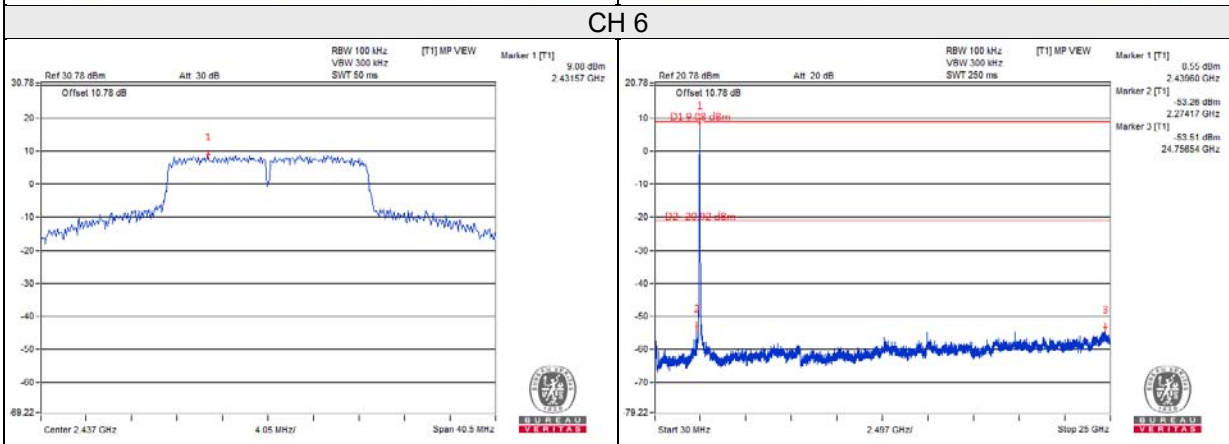
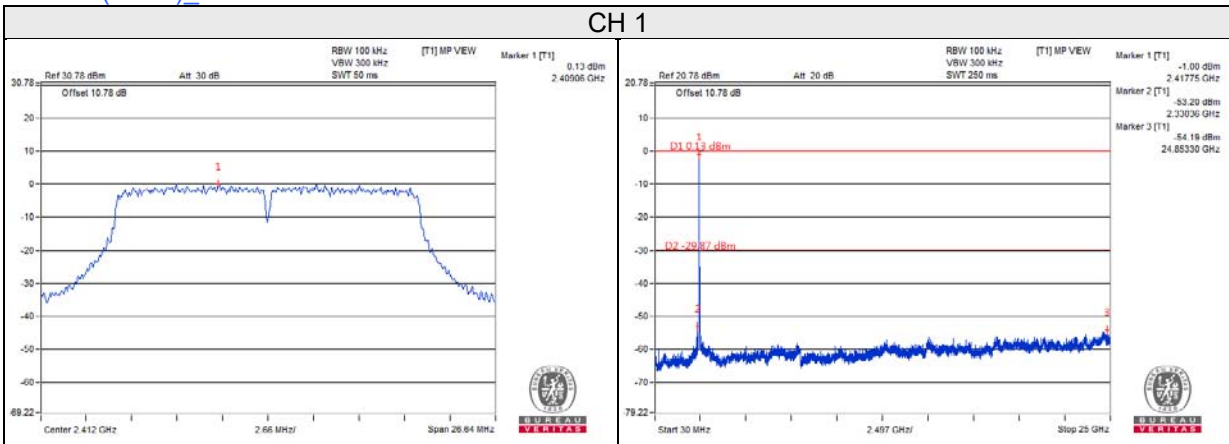
802.11g_Chain 0



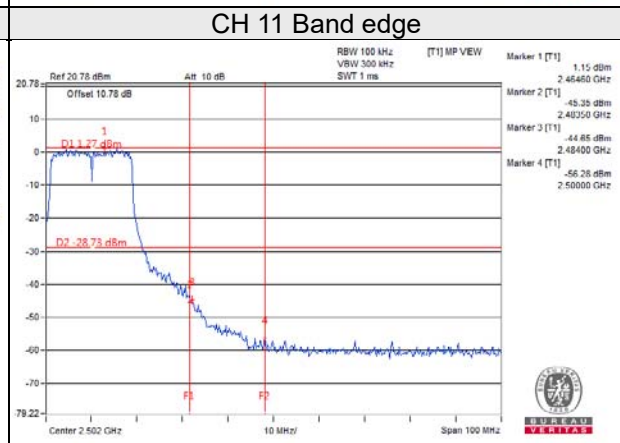
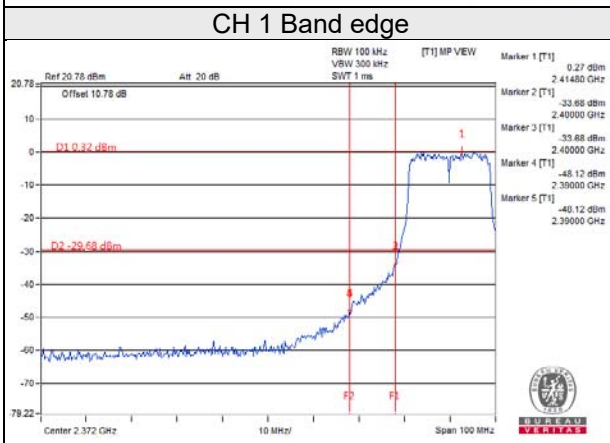
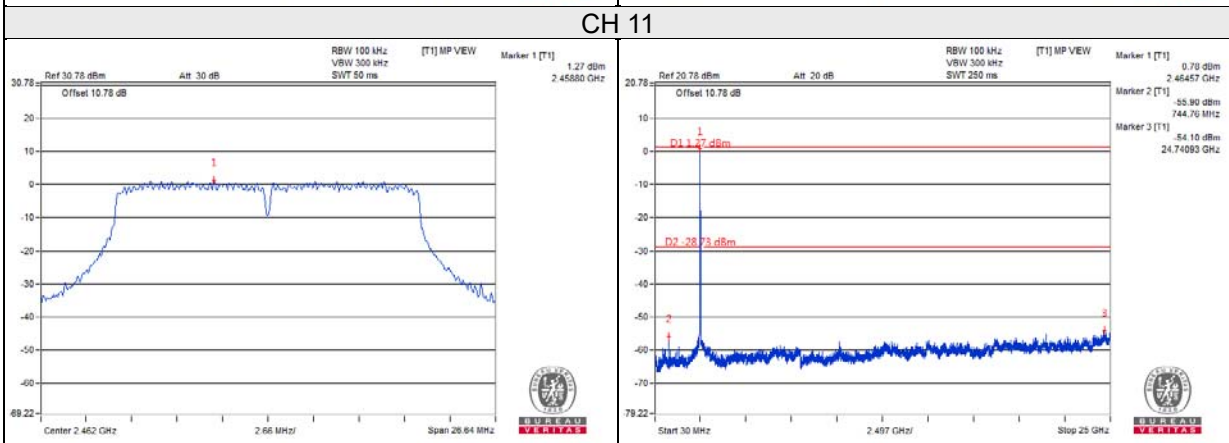
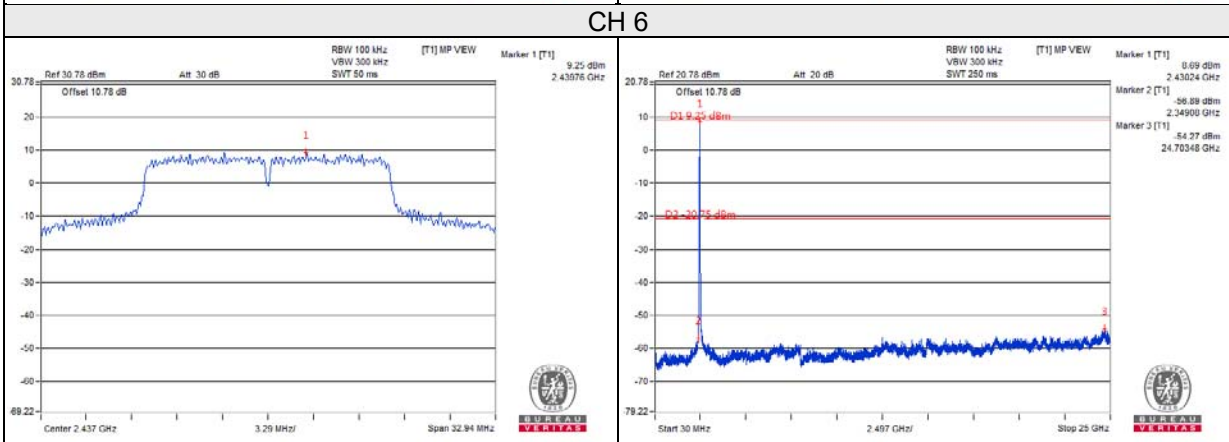
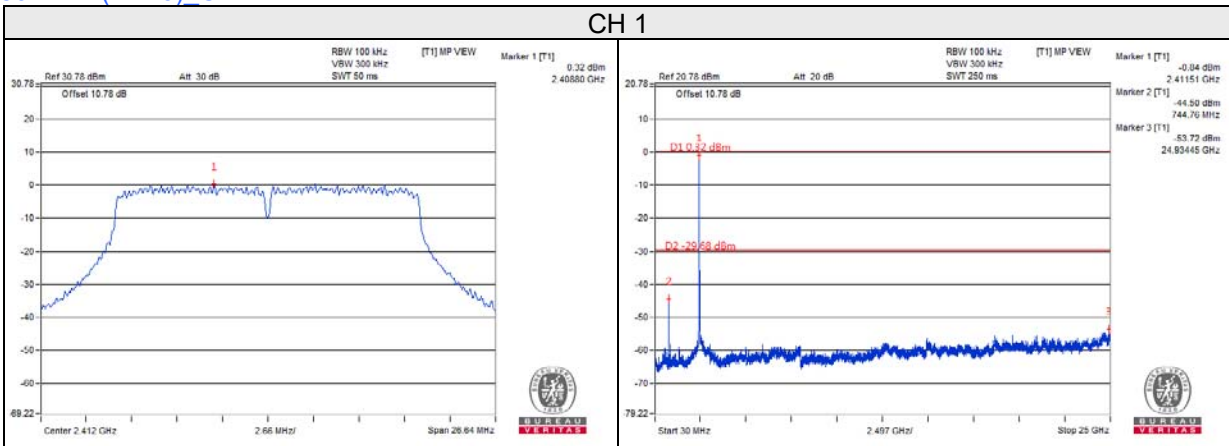
802.11g_Chain 1



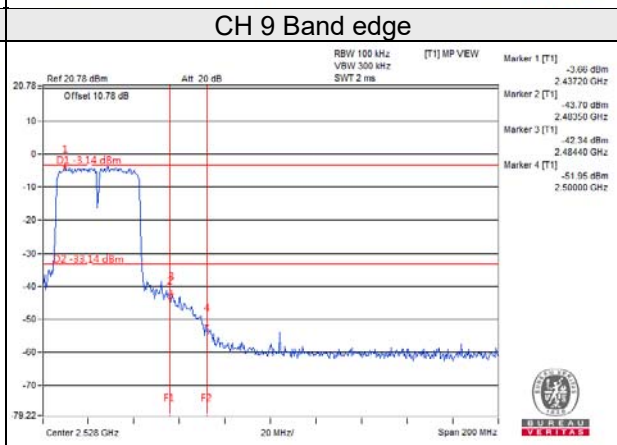
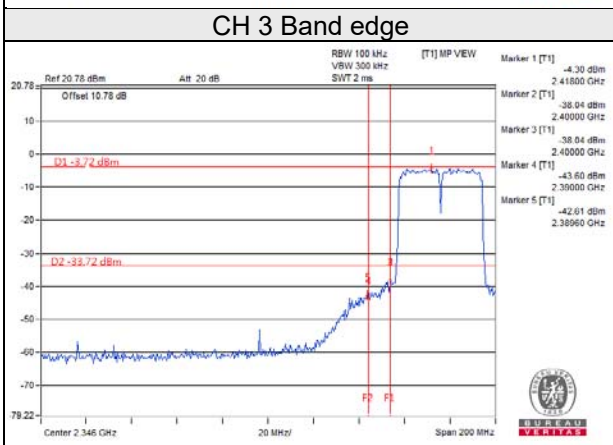
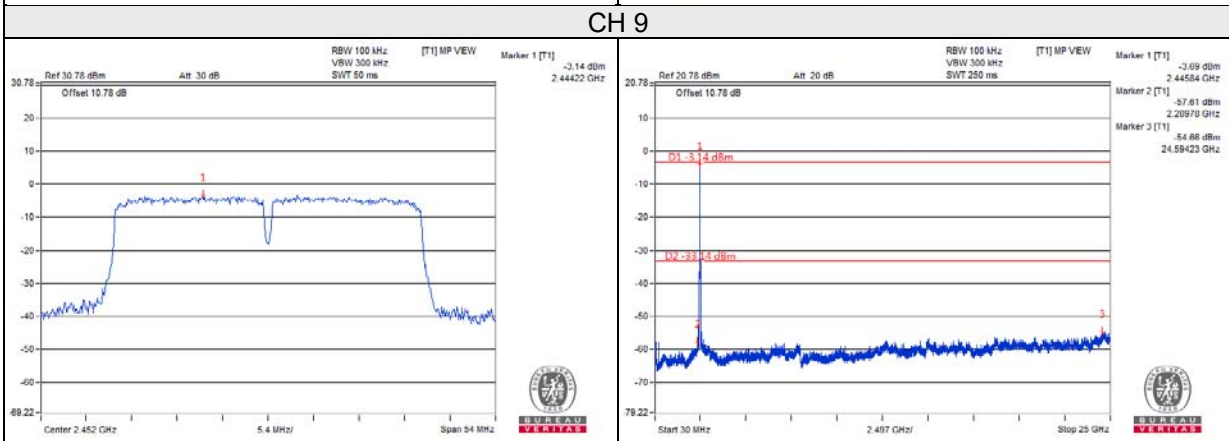
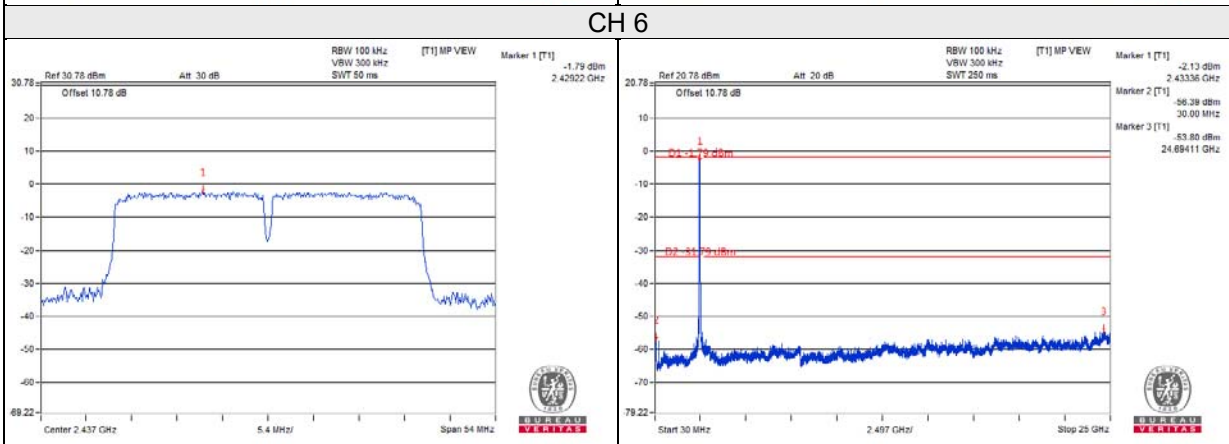
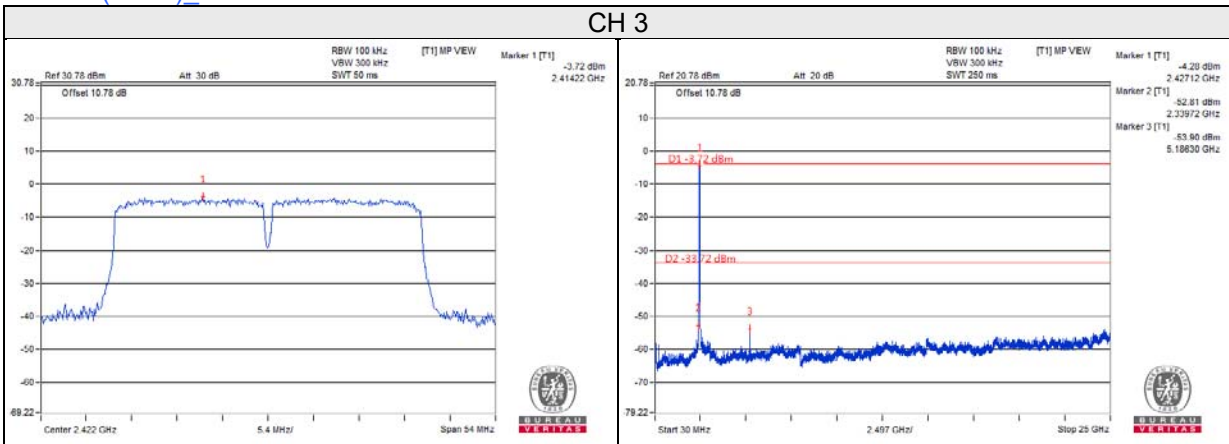
802.11n (HT20)_Chain 0



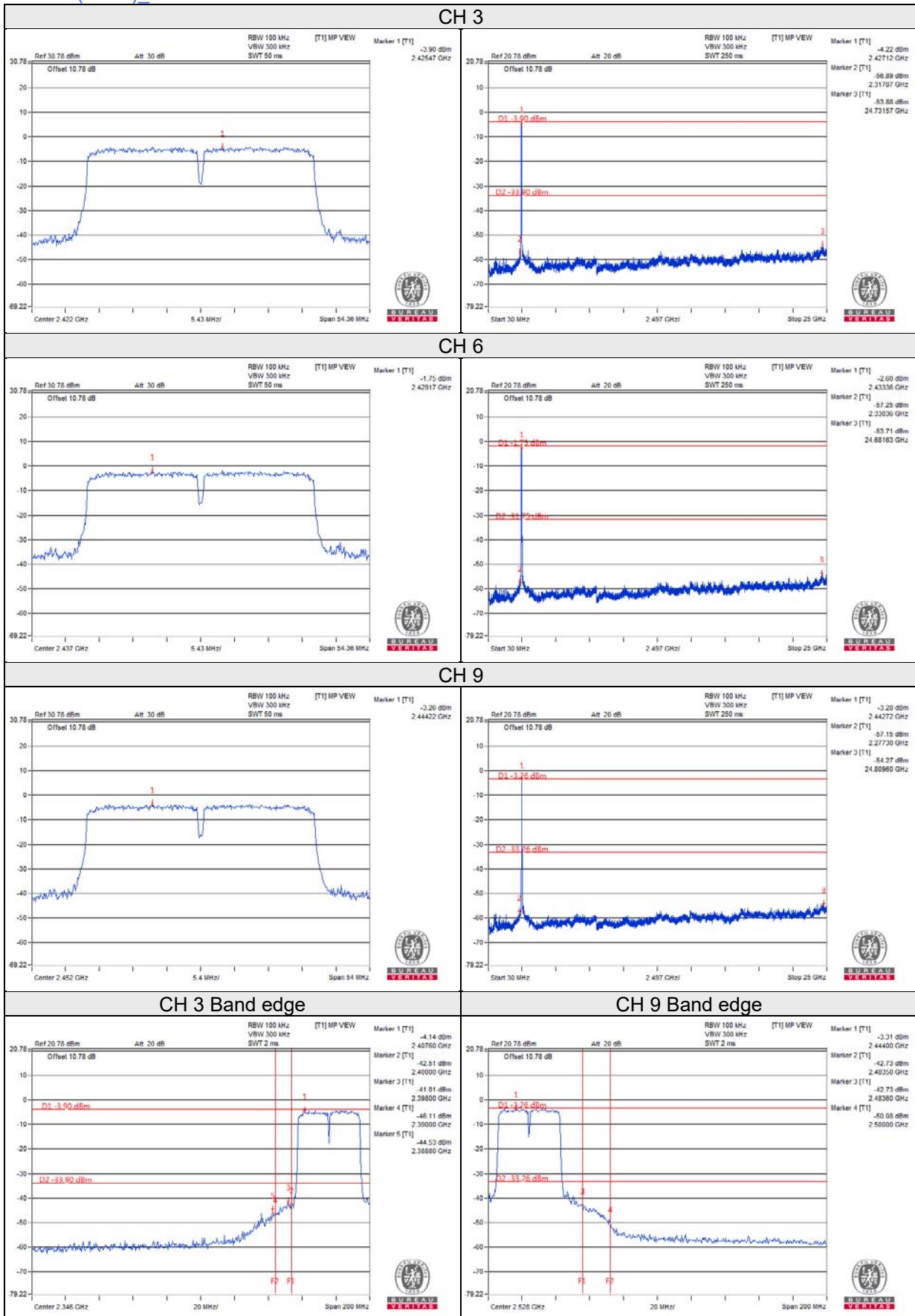
802.11n (HT20) Chain 1



802.11n (HT40)_Chain 0



802.11n (HT40)_Chain 1



5 Pictures of Test Arrangements

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