

FCC Test Report

Report No.: RFBEBW-WTW-P21010678

FCC ID: KA2IS3650APA1

Test Model: DIS-3650AP

Received Date: Jan. 22, 2021

Test Date: Apr. 13~ May 26, 2021

Issued Date: Sep. 03, 2021

Applicant: D-Link Corporation

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Designation Number:



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Table of Contents

Release Control Record	4
1 Certificate of Conformity	5
2 Summary of Test Results	6
2.1 Measurement Uncertainty	6
2.2 Modification Record	6
3 General Information	7
3.1 General Description of EUT	7
3.2 Description of Test Modes	8
3.2.1 Test Mode Applicability and Tested Channel Detail	9
3.3 Duty Cycle of Test Signal	11
3.4 Description of Support Units	12
3.4.1 Configuration of System under Test	12
3.5 General Description of Applied Standards and References	13
4 Test Types and Results	14
4.1 Radiated Emission and Bandedge Measurement	14
4.1.1 Limits of Radiated Emission and Bandedge Measurement	14
4.1.2 Test Instruments	15
4.1.3 Test Procedures	16
4.1.4 Deviation from Test Standard	16
4.1.5 Test Setup	17
4.1.6 EUT Operating Conditions	18
4.1.7 Test Results	19
4.2 Conducted Emission Measurement	33
4.2.1 Limits of Conducted Emission Measurement	33
4.2.2 Test Instruments	33
4.2.3 Test Procedures	34
4.2.4 Deviation from Test Standard	34
4.2.5 Test Setup	34
4.2.6 EUT Operating Conditions	34
4.2.7 Test Results	35
4.3 6dB Bandwidth Measurement	37
4.3.1 Limits of 6dB Bandwidth Measurement	37
4.3.2 Test Setup	37
4.3.3 Test Instruments	37
4.3.4 Test Procedure	37
4.3.5 Deviation from Test Standard	37
4.3.6 EUT Operating Conditions	37
4.3.7 Test Result	38
4.4 Conducted Output Power Measurement	40
4.4.1 Limits of Conducted Output Power Measurement	40
4.4.2 Test Setup	40
4.4.3 Test Instruments	40
4.4.4 Test Procedures	40
4.4.5 Deviation from Test Standard	40
4.4.6 EUT Operating Conditions	40
4.4.7 Test Results	41
4.5 Power Spectral Density Measurement	44
4.5.1 Limits of Power Spectral Density Measurement	44
4.5.2 Test Setup	44
4.5.3 Test Instruments	44
4.5.4 Test Procedure	44
4.5.5 Deviation from Test Standard	45
4.5.6 EUT Operating Condition	45

4.5.7 Test Results	46
4.6 Conducted Out of Band Emission Measurement.....	49
4.6.1 Limits of Conducted Out of Band Emission Measurement	49
4.6.2 Test Setup.....	49
4.6.3 Test Instruments	49
4.6.4 Test Procedure	49
4.6.5 Deviation from Test Standard	49
4.6.6 EUT Operating Condition	49
4.6.7 Test Results	49
Annex A - Band Edge Measurement	58
5 Pictures of Test Arrangements.....	62
Appendix – Information of the Testing Laboratories	63

Release Control Record

Issue No.	Description	Date Issued
RFBEBW-WTW-P21010678	Original release	Sep. 03, 2021

1 Certificate of Conformity

Product: Wireless AC1200 Wave 2 Industrial Outdoor Access Point

Brand: D-Link

Test Model: DIS-3650AP

Sample Status: Engineering sample

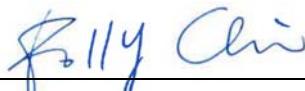
Applicant: D-Link Corporation

Test Date: Apr. 13~ May 26, 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 :


Polly Chien / Specialist

Date:

Sep. 03, 2021

Approved by :



Bruce Chen / Senior Engineer

Date:

Sep. 03, 2021

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 -10.43dB at 14.21427MHz.
15.205 / 15.209 / 15.247(d)	Radiated Emissions and Band Edge Measurement	Pass	Meet the requirement of limit. Minimum passing margin is -0.6dB 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 N Plug 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) (±)
Conducted Emissions at mains ports	150kHz ~ 30MHz	2.79 dB
Radiated Emissions up to 1 GHz	9kHz ~ 30MHz	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 AC1200 Wave 2 Industrial Outdoor Access Point
Brand	D-Link
Test Model	DIS-3650AP
Sample Status	Engineering sample
Power Supply Rating	56Vdc (POE)
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 802.11n (VHT20/40): up to 400Mbps
Operating Frequency	2412 ~ 2462MHz
Number of Channel	802.11b, 802.11g, 802.11n (HT20), 802.11n (VHT20): 11 802.11n (HT40), 802.11n (VHT40): 7
Output Power	CDD Mode: 641.805mW Beamforming Mode: 85.260mW
Antenna Type	Refer to note
Antenna Connector	Refer to note
Accessory Device	NA
Cable Supplied	NA

Note:

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

Modulation Mode	Beamforming Mode	TX Function
802.11b	Not Support	2TX
802.11g	Not Support	2TX
802.11n (HT20)	Support	2TX
802.11n (HT40)	Support	2TX
802.11n (VHT20)	Support	2TX
802.11n (VHT40)	Support	2TX

* * The bandwidth and modulation are similar for HT20/HT40/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)

* 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.

2. The EUT consumes power from the following PoE. (Support units only)

POE (Support unit only)	
Brand	D-Link
Model	DPE-311GI
Input Power	100-240Vac, 0.8A, 50-60Hz
Output Power	56Vdc, 0.54A
Power cord	Non-shielded AC (0.55m)

3. The following antennas were provided to the EUT.

Antenna Type	Omni Antenna	
Antenna Connector	N Plug	
Frequency	2400~2500MHz	5150~5850MHz
Gain (dBi)	3.2	6.5

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

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

3.2 Description of Test Modes

11 channels are provided for 802.11b, 802.11g, 802.11n (HT20), 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), 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 $\geq$ 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 **Z-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)
-	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	OFDM	7.2
-	802.11n (VHT40)	3 to 9	3, 6, 9	OFDM	OFDM	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)
-	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)
-	802.11b	1 to 11	6	DSSS	DBPSK	1.0

Transmit 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)
-	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
-	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

Bandwidth, Peak Power Spectral Density and Frequency Stability Measurement:

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

EUT Configure Mode	Mode	Available Channel	Tested Channel	Modulation Technology	Modulation Type	Data Rate (Mbps)
-	802.11b	1 to 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	120Vac, 60Hz	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	Dalen Dai

3.3 Duty Cycle of Test Signal

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

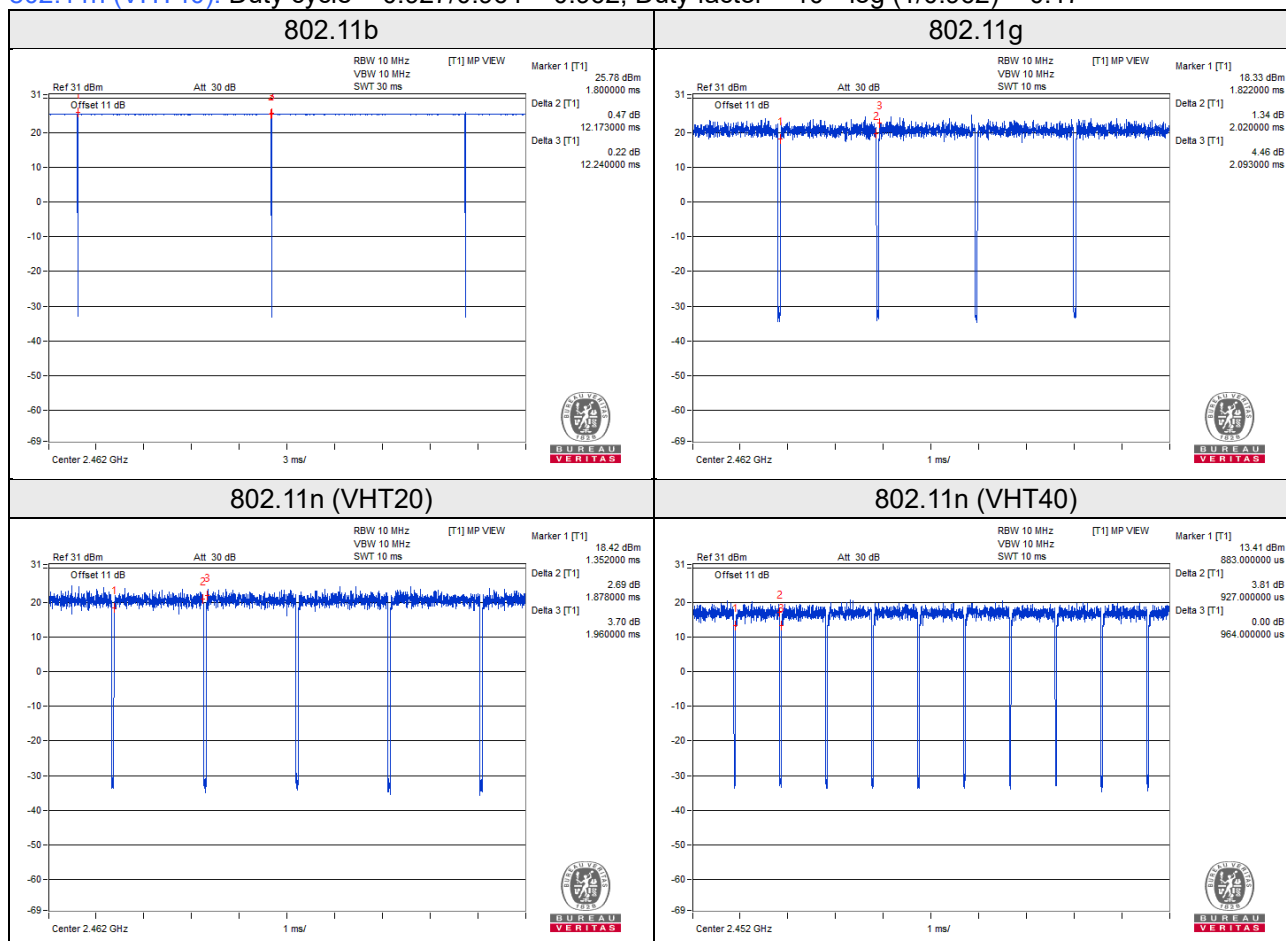
Duty cycle of test signal is < 98%, duty factor is required.

802.11b: Duty cycle = $12.173/12.240 = 0.995$

802.11g: Duty cycle = $2.020/2.093 = 0.965$, Duty factor = $10 * \log(1/0.965) = 0.15$

802.11n (VHT20): Duty cycle = $1.878/1.960 = 0.958$, Duty factor = $10 * \log(1/0.958) = 0.19$

802.11n (VHT40): Duty cycle = $0.927/0.964 = 0.962$, Duty factor = $10 * \log(1/0.962) = 0.17$



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.

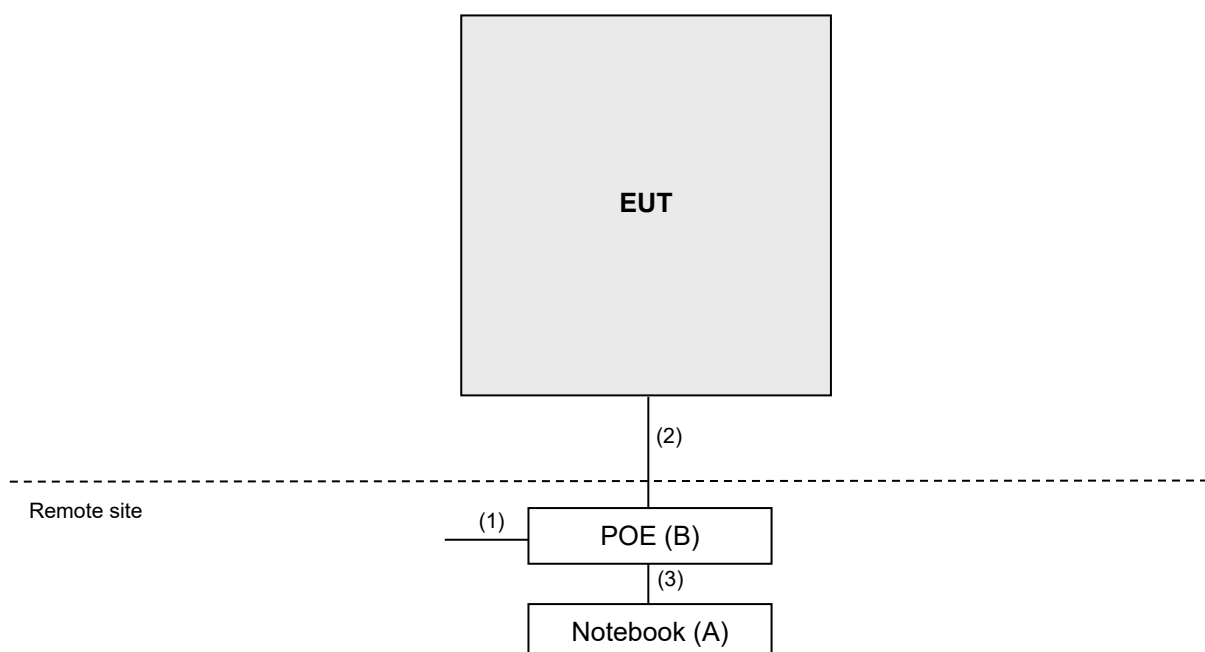
ID	Product	Brand	Model No.	Serial No.	FCC ID	Remarks
A.	Notebook	Lenovo	81A4	YD02TWF5	FCC DoC Approved	-
B.	POE	D-link	DPE-311GI	NA	NA	Provided by client

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	Cable Descriptions	Qty.	Length (m)	Shielding (Yes/No)	Cores (Qty.)	Remarks
1.	Power cable	1	0.55	N	0	Provided by client
2.	LAN cable	1	1	N	0	RJ45, Cat5e
3.	LAN cable	1	7	N	0	RJ45, Cat5e

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 KEYSIGHT	N9038A	MY55420137	Apr. 09, 2021	Apr. 08, 2022
Spectrum Analyzer ROHDE & SCHWARZ	FSP40	100039	Jun. 12, 2020	Jun. 11, 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
Loop Antenna TESEQ	HLA 6121	45745	Jul. 06, 2020	Jul. 05, 2021
Preamplifier Agilent (Below 1GHz)	8447D	2944A10638	Jun. 08, 2020	Jun. 07, 2021
Preamplifier Agilent (Above 1GHz)	8449B	3008A02367	Feb. 17, 2021	Feb. 16, 2022
RF signal cable HUBER+SUHNER&EMCI	SUCOFLEX 104 & EMC104-SM-SM800 0	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
Software BV ADT	ADT_Radiated_ V7.6.15.9.5	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
USB Wideband Power Sensor KEYSIGHT	U2021XA	MY55050005/MY5519 0004/MY55190007/MY 55210005	Jul. 13, 2020	Jul. 12, 2021
Spectrum Analyzer ROHDE & SCHWARZ	FSV40	100979	Mar. 29, 2021	Mar. 28, 2022

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

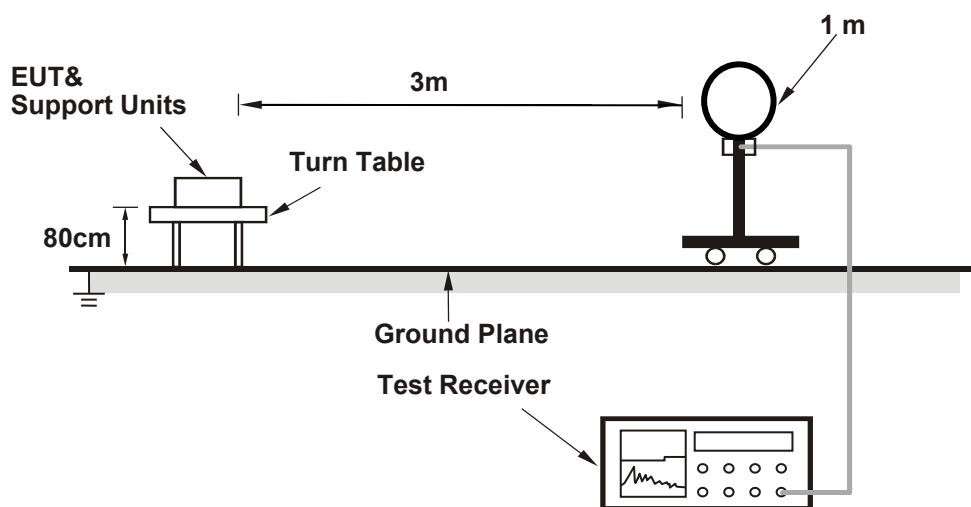
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is $\geq 1/T$ (Duty cycle $< 98\%$) or 10Hz (Duty cycle $\geq 98\%$) for Average detection (AV) at frequency above 1GHz. (802.11b: RBW = 1MHz, VBW = 10Hz; 802.11g: RBW = 1MHz, VBW = 1kHz; 802.11n (VHT20): RBW = 1MHz, VBW = 1kHz; 802.11n (VHT40): RBW = 1MHz, VBW = 3kHz)
4. All modes of operation were investigated and the worst-case emissions are reported.

4.1.4 Deviation from Test Standard

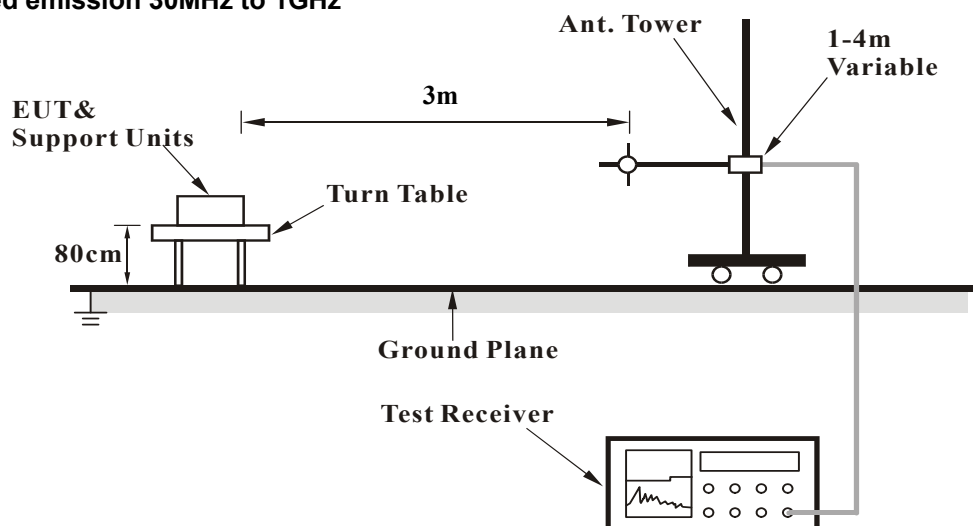
No deviation.

4.1.5 Test Setup

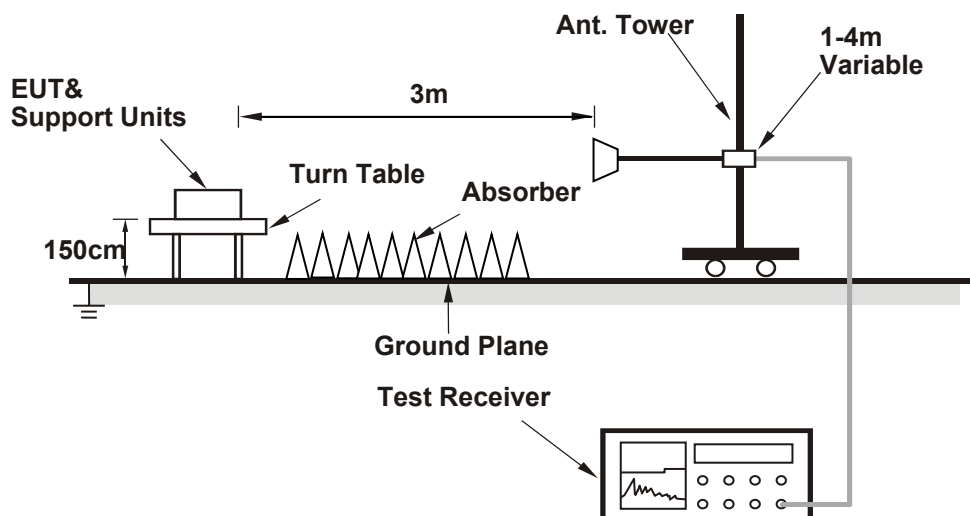
For Radiated emission below 30MHz



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

- Placed the EUT on the testing table.
- Prepared a notebook to act as a communication partner and placed it outside of testing area.
- The communication partner connected with EUT via a RJ45 cable and ran a test program (provided by manufacturer) to enable EUT under transmission condition continuously at specific channel frequency.
- The communication partner sent data to EUT by command "PING".

4.1.7 Test Results

Above 1GHz Data:

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

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2390.00	60.8 PK	74.0	-13.2	3.47 H	226	29.6	31.2
2	2390.00	48.0 AV	54.0	-6.0	3.47 H	226	16.8	31.2
3	*2412.00	102.9 PK			3.47 H	226	71.7	31.2
4	*2412.00	99.9 AV			3.47 H	226	68.7	31.2
5	4824.00	56.6 PK	74.0	-17.4	2.63 H	119	54.5	2.1
6	4824.00	51.9 AV	54.0	-2.1	2.63 H	119	49.8	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	64.5 PK	74.0	-9.5	2.28 V	303	33.3	31.2
2	2390.00	53.3 AV	54.0	-0.7	2.28 V	303	22.1	31.2
3	*2412.00	115.9 PK			2.28 V	303	84.7	31.2
4	*2412.00	112.8 AV			2.28 V	303	81.6	31.2
5	4824.00	50.7 PK	74.0	-23.3	2.73 V	131	48.6	2.1
6	4824.00	45.0 AV	54.0	-9.0	2.73 V	131	42.9	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. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " * ": Fundamental frequency.

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

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2437.00	104.9 PK			1.94 H	332	73.8	31.1
2	*2437.00	101.8 AV			1.94 H	332	70.7	31.1
3	4874.00	57.5 PK	74.0	-16.5	1.95 H	123	55.4	2.1
4	4874.00	52.7 AV	54.0	-1.3	1.95 H	123	50.6	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	*2437.00	117.8 PK			1.94 V	357	86.7	31.1
2	*2437.00	114.7 AV			1.94 V	357	83.6	31.1
3	4874.00	51.4 PK	74.0	-22.6	2.68 V	128	49.3	2.1
4	4874.00	45.8 AV	54.0	-8.2	2.68 V	128	43.7	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. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " * ": Fundamental frequency.

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

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2462.00	104.3 PK			3.47 H	234	73.2	31.1
2	*2462.00	101.3 AV			3.47 H	234	70.2	31.1
3	2483.50	60.9 PK	74.0	-13.1	4.00 H	234	29.8	31.1
4	2483.50	50.7 AV	54.0	-3.3	4.00 H	234	19.6	31.1
5	4924.00	55.8 PK	74.0	-18.2	1.73 H	138	53.7	2.1
6	4924.00	50.6 AV	54.0	-3.4	1.73 H	138	48.5	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	*2462.00	117.5 PK			2.67 V	284	86.4	31.1
2	*2462.00	114.4 AV			2.67 V	284	83.3	31.1
3	2483.50	63.5 PK	74.0	-10.5	2.67 V	284	32.4	31.1
4	2483.50	53.3 AV	54.0	-0.7	2.67 V	284	22.2	31.1
5	4924.00	48.7 PK	74.0	-25.3	2.77 V	137	46.6	2.1
6	4924.00	43.4 AV	54.0	-10.6	2.77 V	137	41.3	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. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " * ": Fundamental frequency.

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

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2390.00	63.6 PK	74.0	-10.4	3.56 H	227	32.4	31.2
2	2390.00	46.5 AV	54.0	-7.5	3.56 H	227	15.3	31.2
3	*2412.00	101.1 PK			3.56 H	227	69.9	31.2
4	*2412.00	91.0 AV			3.56 H	227	59.8	31.2
5	4824.00	60.7 PK	74.0	-13.3	1.71 H	145	58.6	2.1
6	4824.00	46.6 AV	54.0	-7.4	1.71 H	145	44.5	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	2390.00	73.0 PK	74.0	-1.0	2.19 V	317	41.8	31.2
2	2390.00	52.5 AV	54.0	-1.5	2.19 V	317	21.3	31.2
3	*2412.00	114.0 PK			2.19 V	317	82.8	31.2
4	*2412.00	104.0 AV			2.19 V	317	72.8	31.2
5	4824.00	53.3 PK	74.0	-20.7	2.76 V	118	51.2	2.1
6	4824.00	39.4 AV	54.0	-14.6	2.76 V	118	37.3	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. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " * ": Fundamental frequency.

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

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2390.00	62.7 PK	74.0	-11.3	3.42 H	224	31.5	31.2
2	2390.00	46.9 AV	54.0	-7.1	3.42 H	224	15.7	31.2
3	*2437.00	102.7 PK			3.42 H	224	71.6	31.1
4	*2437.00	92.6 AV			3.42 H	224	61.5	31.1
5	4874.00	60.5 PK	74.0	-13.5	1.64 H	133	58.4	2.1
6	4874.00	46.4 AV	54.0	-7.6	1.64 H	133	44.3	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	2390.00	69.4 PK	74.0	-4.6	2.30 V	334	38.2	31.2
2	2390.00	52.6 AV	54.0	-1.4	2.30 V	334	21.4	31.2
3	*2437.00	114.6 PK			2.30 V	334	83.5	31.1
4	*2437.00	104.7 AV			2.30 V	334	73.6	31.1
5	4874.00	53.3 PK	74.0	-20.7	2.65 V	127	51.2	2.1
6	4874.00	39.4 AV	54.0	-14.6	2.65 V	127	37.3	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. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " * ": Fundamental frequency.

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

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2462.00	102.3 PK			3.39 H	217	71.2	31.1
2	*2462.00	92.4 AV			3.39 H	217	61.3	31.1
3	2483.50	65.3 PK	74.0	-8.7	3.39 H	217	34.2	31.1
4	2483.50	46.4 AV	54.0	-7.6	3.39 H	217	15.3	31.1
5	4924.00	58.7 PK	74.0	-15.3	1.67 H	141	56.6	2.1
6	4924.00	44.9 AV	54.0	-9.1	1.67 H	141	42.8	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	*2462.00	113.3 PK			2.27 V	293	82.2	31.1
2	*2462.00	103.3 AV			2.27 V	293	72.2	31.1
3	2483.50	73.2 PK	74.0	-0.8	2.27 V	293	42.1	31.1
4	2483.50	52.6 AV	54.0	-1.4	2.27 V	293	21.5	31.1
5	4924.00	51.8 PK	74.0	-22.2	2.73 V	125	49.7	2.1
6	4924.00	38.0 AV	54.0	-16.0	2.73 V	125	35.9	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. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " * ": Fundamental frequency.

RF Mode	TX 802.11n (VHT20)	Channel	CH 1 : 2412 MHz
Frequency Range	1GHz ~ 25GHz	Detector Function	Peak (PK) Average (AV)

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2390.00	60.4 PK	74.0	-13.6	1.00 H	136	29.2	31.2
2	2390.00	44.6 AV	54.0	-9.4	1.00 H	136	13.4	31.2
3	*2412.00	100.5 PK			1.00 H	136	69.3	31.2
4	*2412.00	90.4 AV			1.00 H	136	59.2	31.2
5	4874.00	58.7 PK	74.0	-15.3	1.66 H	145	56.6	2.1
6	4874.00	44.9 AV	54.0	-9.1	1.66 H	145	42.8	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	72.9 PK	74.0	-1.1	2.25 V	182	41.7	31.2
2	2390.00	53.2 AV	54.0	-0.8	2.25 V	182	22.0	31.2
3	*2412.00	113.3 PK			2.25 V	182	82.1	31.2
4	*2412.00	102.4 AV			2.25 V	182	71.2	31.2
5	4874.00	52.5 PK	74.0	-21.5	2.77 V	110	50.4	2.1
6	4874.00	39.1 AV	54.0	-14.9	2.77 V	110	37.0	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. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " * ": Fundamental frequency.

RF Mode	TX 802.11n (VHT20)	Channel	CH 6 : 2437 MHz
Frequency Range	1GHz ~ 25GHz	Detector Function	Peak (PK) Average (AV)

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2390.00	64.6 PK	74.0	-9.4	3.56 H	224	33.4	31.2
2	2390.00	46.5 AV	54.0	-7.5	3.56 H	224	15.3	31.2
3	*2437.00	104.0 PK			3.56 H	224	72.9	31.1
4	*2437.00	93.9 AV			3.56 H	224	62.8	31.1
5	4874.00	59.8 PK	74.0	-14.2	1.63 H	144	57.7	2.1
6	4874.00	45.7 AV	54.0	-8.3	1.63 H	144	43.6	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	67.4 PK	74.0	-6.6	2.58 V	4	36.2	31.2
2	2390.00	52.8 AV	54.0	-1.2	2.58 V	4	21.6	31.2
3	*2437.00	115.3 PK			2.58 V	4	84.2	31.1
4	*2437.00	105.2 AV			2.58 V	4	74.1	31.1
5	4874.00	53.0 PK	74.0	-21.0	2.74 V	136	50.9	2.1
6	4874.00	38.8 AV	54.0	-15.2	2.74 V	136	36.7	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. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " * ": Fundamental frequency.

RF Mode	TX 802.11n (VHT20)	Channel	CH 11 : 2462 MHz
Frequency Range	1GHz ~ 25GHz	Detector Function	Peak (PK) Average (AV)

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2462.00	101.8 PK			3.37 H	232	70.7	31.1
2	*2462.00	91.7 AV			3.37 H	232	60.6	31.1
3	2483.50	66.6 PK	74.0	-7.4	3.37 H	232	35.5	31.1
4	2483.50	46.5 AV	54.0	-7.5	3.37 H	232	15.4	31.1
5	4924.00	58.8 PK	74.0	-15.2	1.66 H	147	56.7	2.1
6	4924.00	44.7 AV	54.0	-9.3	1.66 H	147	42.6	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	*2462.00	113.2 PK			2.52 V	346	82.1	31.1
2	*2462.00	103.3 AV			2.52 V	346	72.2	31.1
3	2483.50	73.4 PK	74.0	-0.6	2.52 V	346	42.3	31.1
4	2483.50	52.4 AV	54.0	-1.6	2.52 V	346	21.3	31.1
5	4924.00	51.4 PK	74.0	-22.6	2.74 V	121	49.3	2.1
6	4924.00	37.8 AV	54.0	-16.2	2.74 V	121	35.7	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. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " * ": Fundamental frequency.

RF Mode	TX 802.11n (VHT40)	Channel	CH 3 : 2422 MHz
Frequency Range	1GHz ~ 25GHz	Detector Function	Peak (PK) Average (AV)

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2390.00	68.0 PK	74.0	-6.0	3.51 H	227	36.8	31.2
2	2390.00	48.1 AV	54.0	-5.9	3.51 H	227	16.9	31.2
3	*2422.00	97.3 PK			3.51 H	227	66.1	31.2
4	*2422.00	87.6 AV			3.51 H	227	56.4	31.2
5	4844.00	50.7 PK	74.0	-23.3	1.64 H	137	48.6	2.1
6	4844.00	37.6 AV	54.0	-16.4	1.64 H	137	35.5	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	2390.00	73.3 PK	74.0	-0.7	2.85 V	337	42.1	31.2
2	2390.00	52.7 AV	54.0	-1.3	2.85 V	337	21.5	31.2
3	*2422.00	107.5 PK			2.85 V	337	76.3	31.2
4	*2422.00	97.9 AV			2.85 V	337	66.7	31.2
5	4844.00	43.4 PK	74.0	-30.6	2.54 V	208	41.3	2.1
6	4844.00	30.5 AV	54.0	-23.5	2.54 V	208	28.4	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. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " * ": Fundamental frequency.

RF Mode	TX 802.11n (VHT40)	Channel	CH 6 : 2437 MHz
Frequency Range	1GHz ~ 25GHz	Detector Function	Peak (PK) Average (AV)

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2437.00	98.7 PK			3.54 H	232	67.6	31.1
2	*2437.00	88.7 AV			3.54 H	232	57.6	31.1
3	2483.50	62.0 PK	74.0	-12.0	3.54 H	232	30.9	31.1
4	2483.50	46.9 AV	54.0	-7.1	3.54 H	232	15.8	31.1
5	4874.00	51.5 PK	74.0	-22.5	1.71 H	149	49.4	2.1
6	4874.00	38.7 AV	54.0	-15.3	1.71 H	149	36.6	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	*2437.00	110.6 PK			2.03 V	322	79.5	31.1
2	*2437.00	100.6 AV			2.03 V	322	69.5	31.1
3	2483.50	70.5 PK	74.0	-3.5	2.03 V	322	39.4	31.1
4	2483.50	52.7 AV	54.0	-1.3	2.03 V	322	21.6	31.1
5	4874.00	44.5 PK	74.0	-29.5	2.10 V	215	42.4	2.1
6	4874.00	31.6 AV	54.0	-22.4	2.10 V	215	29.5	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. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " * ": Fundamental frequency.

RF Mode	TX 802.11n (VHT40)	Channel	CH 9 : 2452 MHz
Frequency Range	1GHz ~ 25GHz	Detector Function	Peak (PK) Average (AV)

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2452.00	98.0 PK			3.37 H	235	66.9	31.1
2	*2452.00	87.9 AV			3.37 H	235	56.8	31.1
3	2483.50	66.2 PK	74.0	-7.8	3.37 H	235	35.1	31.1
4	2483.50	48.6 AV	54.0	-5.4	3.37 H	235	17.5	31.1
5	4904.00	51.2 PK	74.0	-22.8	1.71 H	147	49.2	2.0
6	4904.00	36.7 AV	54.0	-17.3	1.71 H	147	34.7	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	108.7 PK			2.28 V	287	77.6	31.1
2	*2452.00	98.2 AV			2.28 V	287	67.1	31.1
3	2483.50	72.7 PK	74.0	-1.3	2.28 V	287	41.6	31.1
4	2483.50	52.5 AV	54.0	-1.5	2.28 V	287	21.4	31.1
5	4904.00	44.2 PK	74.0	-29.8	2.67 V	134	42.2	2.0
6	4904.00	29.8 AV	54.0	-24.2	2.67 V	134	27.8	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. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " * ": Fundamental frequency.

Below 1GHz worst-case data:

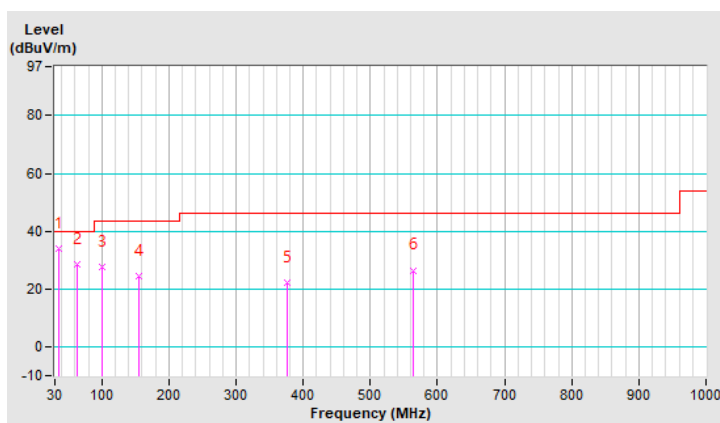
802.11b

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	36.79	34.2 QP	40.0	-5.8	1.25 H	193	44.1	-9.9
2	63.95	28.6 QP	40.0	-11.4	1.00 H	328	38.5	-9.9
3	99.84	27.6 QP	43.5	-15.9	2.00 H	187	40.7	-13.1
4	156.10	24.3 QP	43.5	-19.2	1.00 H	8	32.4	-8.1
5	375.32	22.3 QP	46.0	-23.7	1.25 H	193	27.3	-5.0
6	563.50	26.5 QP	46.0	-19.5	1.00 H	49	28.0	-1.5

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 of frequency range 30MHz ~ 1000MHz.
4. Margin value = Emission Level – Limit value.
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.

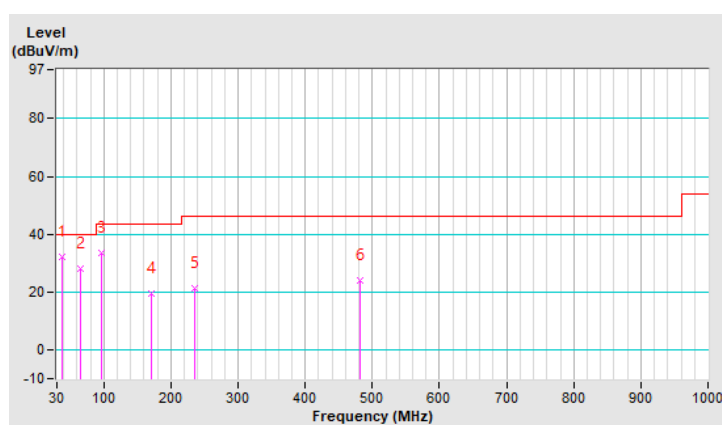


CHANNEL	TX Channel 6	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	9kHz ~ 1GHz		

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	37.76	32.3 QP	40.0	-7.7	1.50 V	239	42.2	-9.9
2	65.89	28.0 QP	40.0	-12.0	1.00 V	18	38.1	-10.1
3	96.93	33.5 QP	43.5	-10.0	1.25 V	180	47.3	-13.8
4	170.65	19.3 QP	43.5	-24.2	1.00 V	231	28.0	-8.7
5	235.64	21.2 QP	46.0	-24.8	2.00 V	257	30.8	-9.6
6	481.05	24.2 QP	46.0	-21.8	1.25 V	160	27.2	-3.0

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 of frequency range 30MHz ~ 1000MHz.
4. Margin value = Emission Level – Limit value.
5. The emission levels were very low against the limit of frequency range 9kHz ~ 30MHz: the amplitude of spurious emissions attenuated more than 20 dB below the permissible value to be report.



4.2 Conducted Emission Measurement

4.2.1 Limits of Conducted Emission Measurement

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

Note: 1. The lower limit shall apply at the transition frequencies.

2. The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50MHz.

4.2.2 Test Instruments

Description & Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Due
Test Receiver ROHDE & SCHWARZ	ESR3	102412	Jan. 29, 2021	Jan. 28, 2022
RF signal cable (with 10dB PAD) Woken	5D-FB	Cable-cond2-01	Sep. 04, 2020	Sep. 03, 2021
LISN/AMN ROHDE & SCHWARZ (EUT)	ESH2-Z5	100100	Jan. 28, 2021	Jan. 27, 2022
LISN/AMN ROHDE & SCHWARZ (Peripheral)	ESH3-Z5	100312	Aug. 18, 2020	Aug. 17, 2021
Software ADT	BV ADT_Conc_ 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

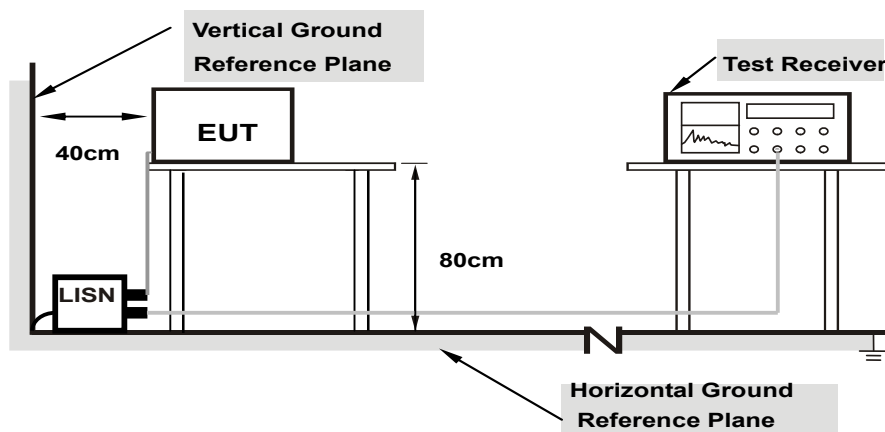
- The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling impedance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

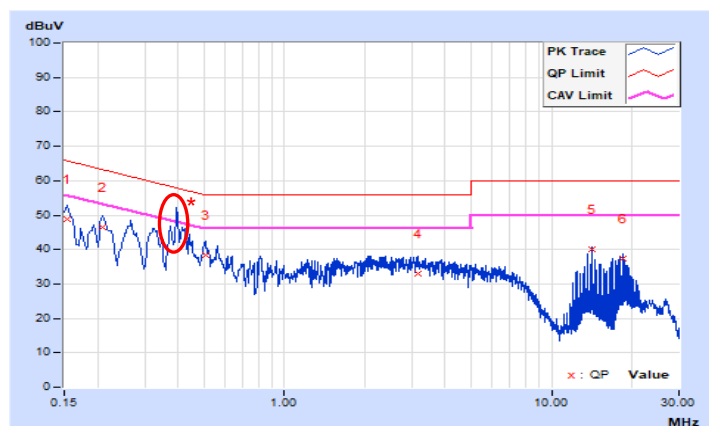
802.11b

Phase	Line (L)	Detector Function	Quasi-Peak (QP) / Average (AV)
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No	Freq. [MHz]	Corr. Factor (dB)	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15391	10.07	38.69	29.58	48.76	39.65	65.79	55.79	-17.03	-16.14
2	0.20865	10.08	36.51	27.07	46.59	37.15	63.26	53.26	-16.67	-16.11
3	0.50972	10.10	28.28	20.51	38.38	30.61	56.00	46.00	-17.62	-15.39
4	3.15679	10.19	22.73	14.06	32.92	24.25	56.00	46.00	-23.08	-21.75
5	14.21427	10.37	29.70	29.20	40.07	39.57	60.00	50.00	-19.93	-10.43
6	18.39406	10.43	26.95	25.92	37.38	36.35	60.00	50.00	-22.62	-13.65

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.



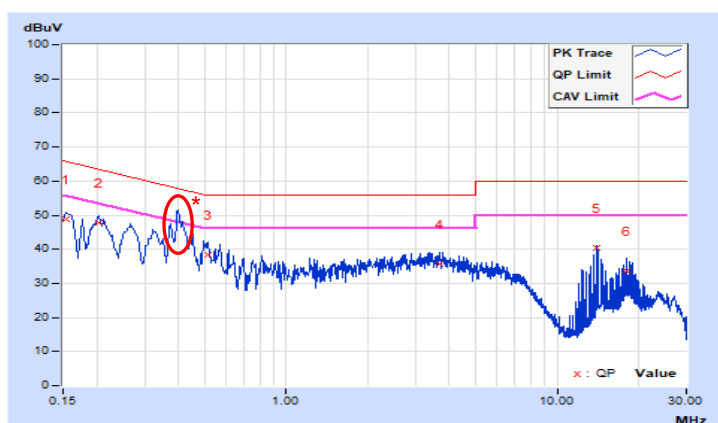
*This EUT is Class A product, the non-RF signal please refer to FCC Part 15, subpart B test report (BV CPS Repor No.: FDBEBW-WTW-P21010678).

Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)
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No	Freq. [MHz]	Corr. Factor (dB)	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15391	10.08	38.75	29.65	48.83	39.73	65.79	55.79	-16.96	-16.06
2	0.20458	10.08	37.78	27.97	47.86	38.05	63.42	53.42	-15.56	-15.37
3	0.51177	10.11	28.31	20.00	38.42	30.11	56.00	46.00	-17.58	-15.89
4	3.70419	10.25	25.37	16.65	35.62	26.90	56.00	46.00	-20.38	-19.10
5	13.93666	10.50	29.77	29.06	40.27	39.56	60.00	50.00	-19.73	-10.44
6	18.12036	10.60	23.05	20.22	33.65	30.82	60.00	50.00	-26.35	-19.18

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.



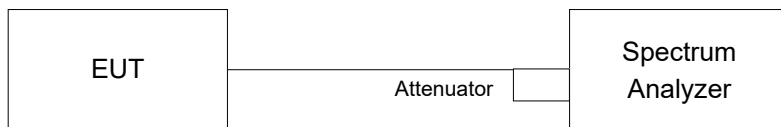
*This EUT is Class A product, the non-RF signal please refer to FCC Part 15, subpart B test report (BV CPS Repor No.: FDBEBW-WTW-P21010678).

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	7.05	7.09	0.5	Pass
6	2437	7.11	7.12	0.5	Pass
11	2462	7.10	7.11	0.5	Pass

802.11g

Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
1	2412	15.14	15.14	0.5	Pass
6	2437	15.17	15.13	0.5	Pass
11	2462	15.14	15.15	0.5	Pass

802.11n (VHT20)

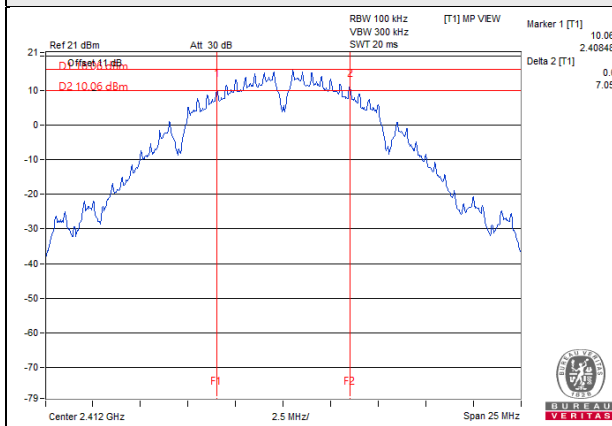
Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
1	2412	15.15	15.15	0.5	Pass
6	2437	15.14	15.16	0.5	Pass
11	2462	15.11	15.16	0.5	Pass

802.11n (VHT40)

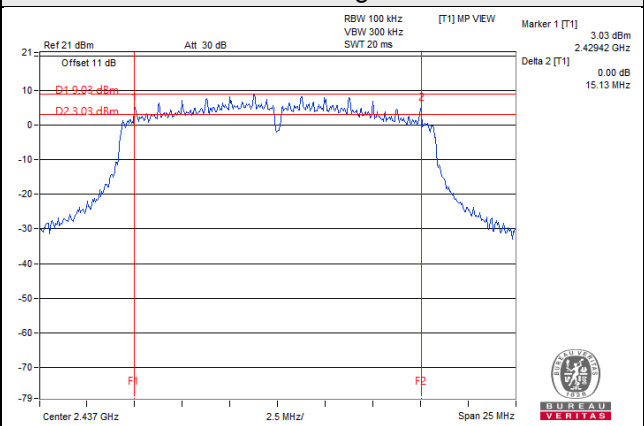
Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
3	2422	30.14	32.59	0.5	Pass
6	2437	35.10	32.60	0.5	Pass
9	2452	32.57	32.62	0.5	Pass

Spectrum Plot of Worst Value

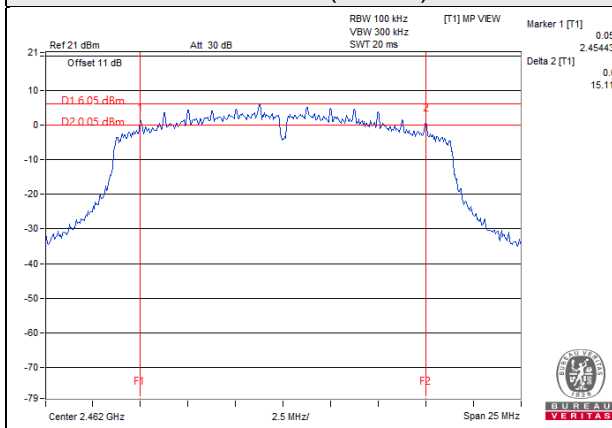
802.11b



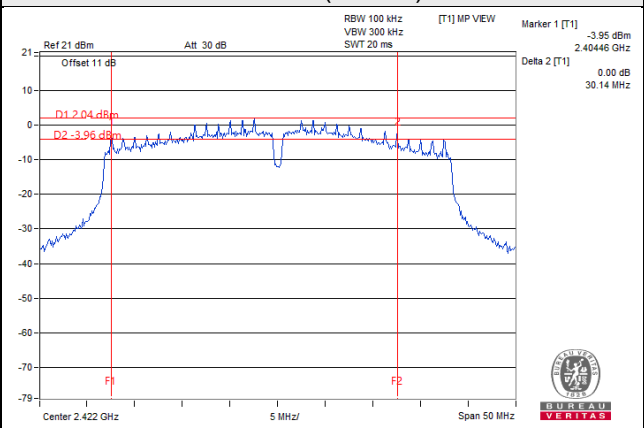
802.11g



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,

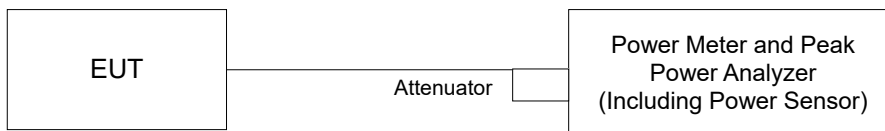
Array Gain = 0 dB (i.e., no array gain) for $N_{ANT} \leq 4$;

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

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	23.99	23.11	455.255	26.58	30.00	Pass
6	2437	25.24	24.88	641.805	28.07	30.00	Pass
11	2462	23.47	23.25	433.680	26.37	30.00	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	18.71	17.99	137.253	21.38	30.00	Pass
6	2437	19.21	18.45	153.352	21.86	30.00	Pass
11	2462	17.26	16.98	103.099	20.13	30.00	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	17.71	17.45	114.611	20.59	30.00	Pass
6	2437	19.53	18.84	166.303	22.21	30.00	Pass
11	2462	17.01	16.52	95.109	19.78	30.00	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	15.35	14.98	65.754	18.18	30.00	Pass
6	2437	18.74	18.24	141.498	21.51	30.00	Pass
9	2452	15.25	15.00	65.119	18.14	30.00	Pass

802.11n (VHT20)

Channel	Frequency (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
1	2412	17.82	17.51	116.898	20.68	30.00	Pass
6	2437	19.62	18.97	170.508	22.32	30.00	Pass
11	2462	17.05	16.57	96.093	19.83	30.00	Pass

802.11n (VHT40)

Channel	Frequency (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
3	2422	15.47	15.03	67.079	18.27	30.00	Pass
6	2437	18.87	18.32	145.011	21.61	30.00	Pass
9	2452	15.34	15.03	66.040	18.20	30.00	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	14.70	14.44	57.309	17.58	29.79	Pass
6	2437	16.52	15.83	83.157	19.20	29.79	Pass
11	2462	14.00	13.51	47.558	16.77	29.79	Pass

Note: Directional gain = $3.2\text{dBi} + 10\log(2) = 6.21\text{dBi} > 6\text{dBi}$, so the power limit shall be reduced to $30 - (6.21 - 6) = 29.79\text{dBi}$.

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	12.34	11.97	32.879	15.17	29.79	Pass
6	2437	15.73	15.23	70.754	18.50	29.79	Pass
9	2452	12.24	11.99	32.562	15.13	29.79	Pass

Note: Directional gain = $3.2\text{dBi} + 10\log(2) = 6.21\text{dBi} > 6\text{dBi}$, so the power limit shall be reduced to $30 - (6.21 - 6) = 29.79\text{dBi}$.

802.11n (VHT20)

Channel	Frequency (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
1	2412	14.81	14.50	58.453	17.67	29.79	Pass
6	2437	16.61	15.96	85.260	19.31	29.79	Pass
11	2462	14.04	13.56	48.050	16.82	29.79	Pass

Note: Directional gain = $3.2\text{dBi} + 10\log(2) = 6.21\text{dBi} > 6\text{dBi}$, so the power limit shall be reduced to $30 - (6.21 - 6) = 29.79\text{dBi}$.

802.11n (VHT40)

Channel	Frequency (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
3	2422	12.46	12.02	33.542	15.26	29.79	Pass
6	2437	15.86	15.31	72.510	18.60	29.79	Pass
9	2452	12.33	12.02	33.022	15.19	29.79	Pass

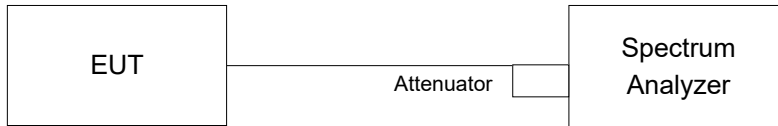
Note: Directional gain = $3.2\text{dBi} + 10\log(2) = 6.21\text{dBi} > 6\text{dBi}$, so the power limit shall be reduced to $30 - (6.21 - 6) = 29.79\text{dBi}$.

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.

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

- Measure the duty cycle (x).
- 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.
- Do not use sweep triggering. Allow sweep to "free run".
- Employ trace averaging (RMS) mode over a minimum of 100 traces.
- Use the peak marker function to determine the maximum amplitude level.
- Add $10 \log (1/x)$, where x is the duty cycle measured in step (a), to the measured PSD to compute the average PSD during the actual transmission time.

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	-8.50	3.01	-5.49	7.79	Pass
	6	2437	-8.17	3.01	-5.16	7.79	Pass
	11	2462	-9.79	3.01	-6.78	7.79	Pass
1	1	2412	-8.68	3.01	-5.67	7.79	Pass
	6	2437	-8.19	3.01	-5.18	7.79	Pass
	11	2462	-8.95	3.01	-5.94	7.79	Pass

Note:

1. Method E) 2) c) of power density measurement of KDB 662911 is using for calculating total power density, Measure and add 10 log (N_{ANT}) dB.
2. Directional gain = 3.2dBi + 10log(2) = 6.21dBi > 6dBi, so the power density limit shall be reduced to 8 - (6.21 - 6) = 7.79dBm.

802.11g

TX chain	Channel	Frequency (MHz)	PSD w/o Duty Factor (dBm/3kHz)	10 log (N=2) dB	Duty Factor (dB)	Total PSD With Duty Factor (dBm/3kHz)	Limit (dBm/3kHz)	Pass / Fail
0	1	2412	-16.63	3.01	0.15	-13.47	7.79	Pass
	6	2437	-15.66	3.01	0.15	-12.5	7.79	Pass
	11	2462	-18.83	3.01	0.15	-15.67	7.79	Pass
1	1	2412	-16.63	3.01	0.15	-13.47	7.79	Pass
	6	2437	-16.14	3.01	0.15	-12.98	7.79	Pass
	11	2462	-17.55	3.01	0.15	-14.39	7.79	Pass

Note:

1. Method E) 2) c) of power density measurement of KDB 662911 is using for calculating total power density, Measure and add 10 log (N_{ANT}) dB.
2. Directional gain = 3.2dBi + 10log(2) = 6.21dBi > 6dBi, so the power density limit shall be reduced to 8 - (6.21 - 6) = 7.79dBm.
3. Refer to section 3.3 for duty cycle spectrum plot.

802.11n (VHT20)

TX chain	Channel	Frequency (MHz)	PSD w/o Duty Factor (dBm/3kHz)	10 log (N=2) dB	Duty Factor (dB)	Total PSD With Duty Factor (dBm/3kHz)	Limit (dBm/3kHz)	Pass / Fail
0	1	2412	-18.48	3.01	0.19	-15.28	7.79	Pass
	6	2437	-16.53	3.01	0.19	-13.33	7.79	Pass
	11	2462	-18.55	3.01	0.19	-15.35	7.79	Pass
1	1	2412	-18.73	3.01	0.19	-15.53	7.79	Pass
	6	2437	-16.11	3.01	0.19	-12.91	7.79	Pass
	11	2462	-17.54	3.01	0.19	-14.34	7.79	Pass

Note:

1. Method E) 2) c) of power density measurement of KDB 662911 is using for calculating total power density, Measure and add $10 \log (N_{ANT})$ dB.
2. Directional gain = $3.2\text{dBi} + 10\log(2) = 6.21\text{dBi} > 6\text{dBi}$, so the power density limit shall be reduced to $8 - (6.21 - 6) = 7.79\text{dBm}$.
3. Refer to section 3.3 for duty cycle spectrum plot.

802.11n (VHT40)

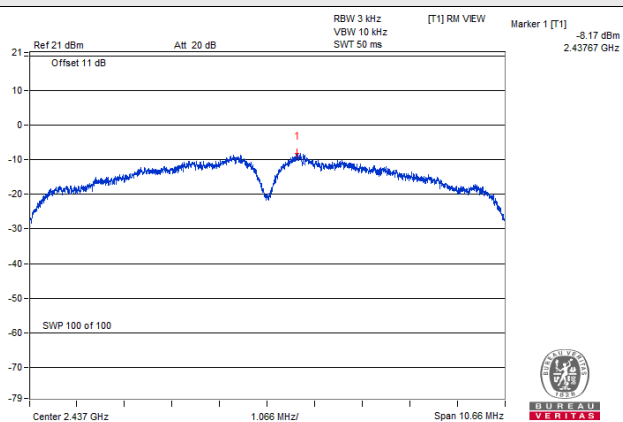
TX chain	Channel	Frequency (MHz)	PSD w/o Duty Factor (dBm/3kHz)	10 log (N=2) dB	Duty Factor (dB)	Total PSD With Duty Factor (dBm/3kHz)	Limit (dBm/3kHz)	Pass / Fail
0	3	2422	-23.77	3.01	0.17	-20.59	7.79	Pass
	6	2437	-20.15	3.01	0.17	-16.97	7.79	Pass
	9	2452	-23.31	3.01	0.17	-20.13	7.79	Pass
1	3	2422	-24.28	3.01	0.17	-21.1	7.79	Pass
	6	2437	-20.67	3.01	0.17	-17.49	7.79	Pass
	9	2452	-22.36	3.01	0.17	-19.18	7.79	Pass

Note:

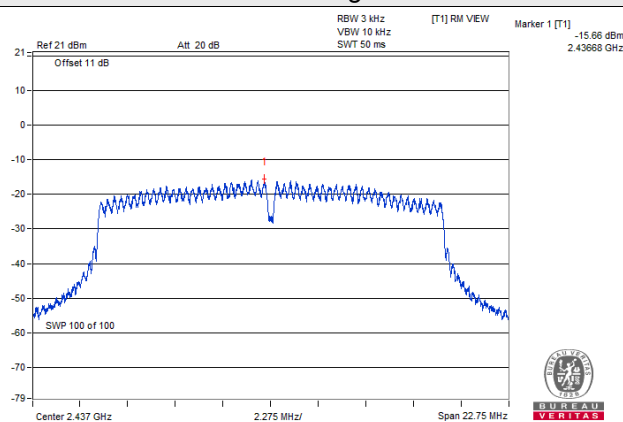
1. Method E) 2) c) of power density measurement of KDB 662911 is using for calculating total power density, Measure and add $10 \log (N_{ANT})$ dB.
2. Directional gain = $3.2\text{dBi} + 10\log(2) = 6.21\text{dBi} > 6\text{dBi}$, so the power density limit shall be reduced to $8 - (6.21 - 6) = 7.79\text{dBm}$.
3. Refer to section 3.3 for duty cycle spectrum plot.

Spectrum Plot of Worst Value

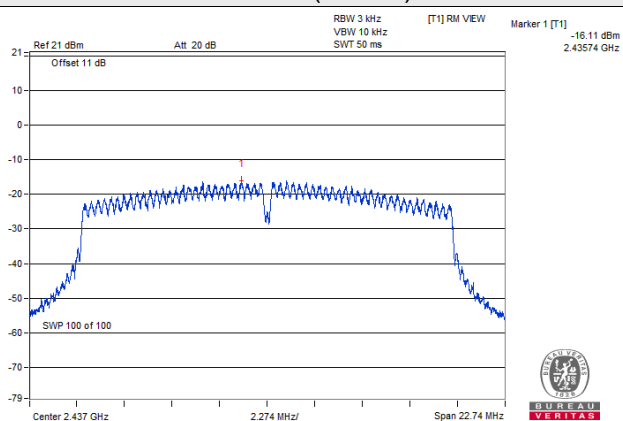
802.11b



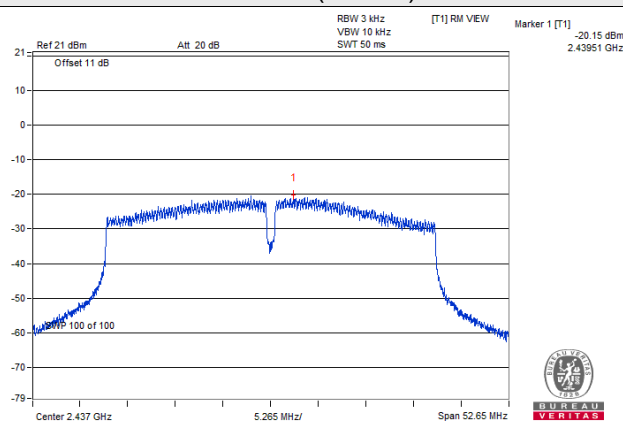
802.11g



802.11n (VHT20)



802.11n (VHT40)

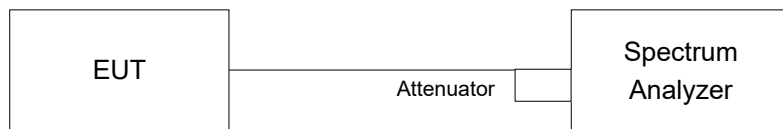


4.6 Conducted Out of Band Emission Measurement

4.6.1 Limits of Conducted Out of Band Emission Measurement

Below -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

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

MEASUREMENT PROCEDURE OOB

- Set RBW = 100 kHz.
- Set VBW $\geq$ 300 kHz.
- Detector = peak.
- Sweep = auto couple.
- Trace Mode = max hold.
- Allow trace to fully stabilize.
- 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

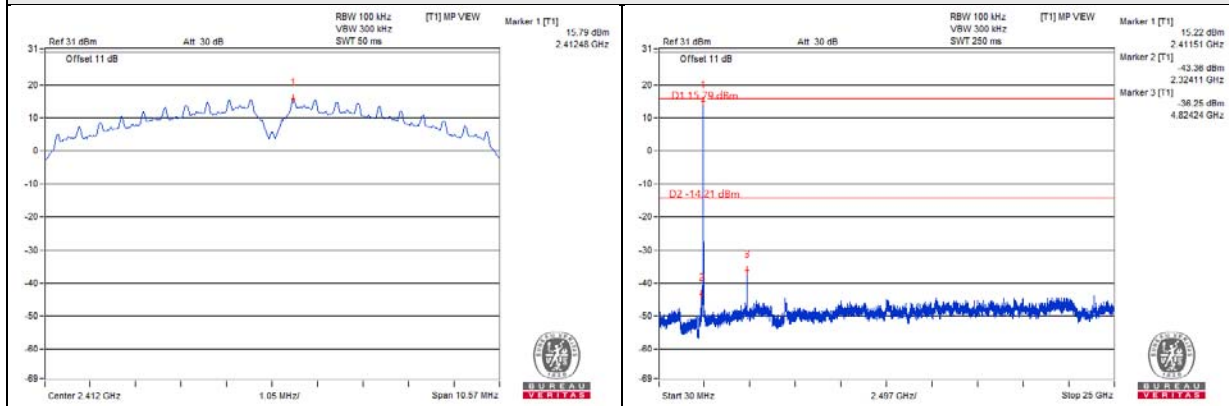
4.6.7 Test Results

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.

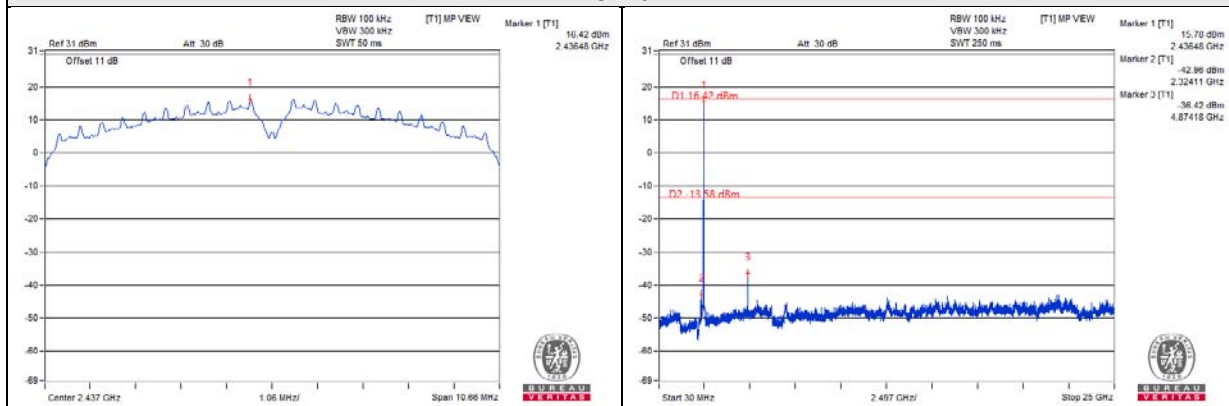
The spectrum plots are attached on the following pages. D1 line indicates the highest level, and D2 line indicates the 30dB offset below D1. It shows compliance with the requirement.

802.11b_Chain 0

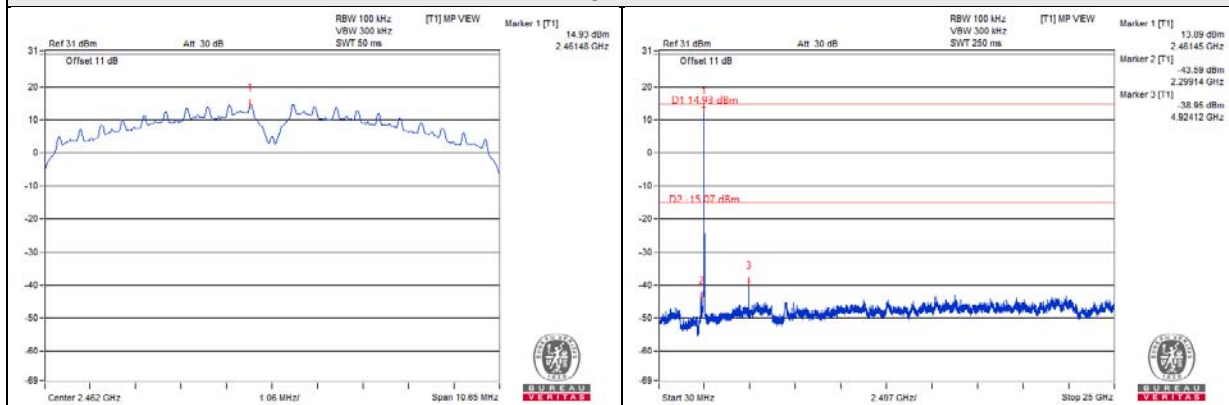
CH 1



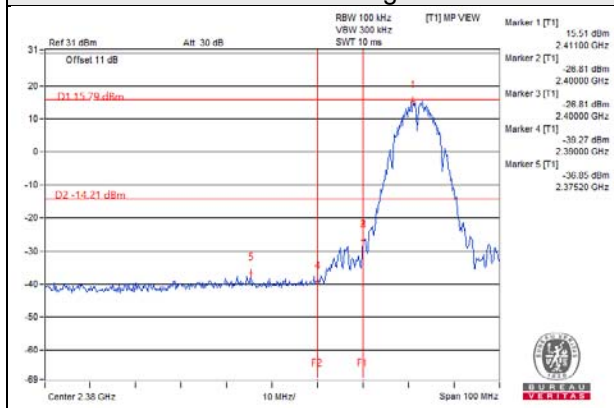
CH 6



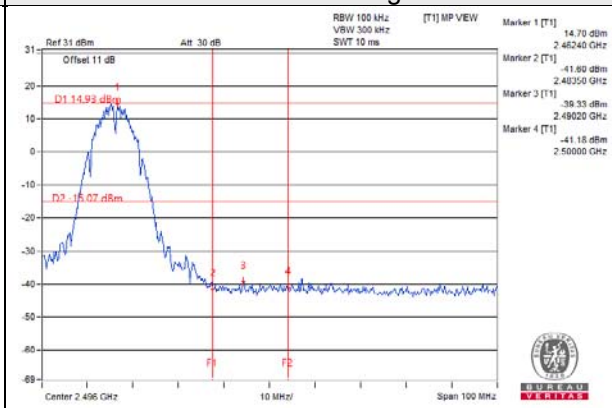
CH 11



CH 1 Band edge

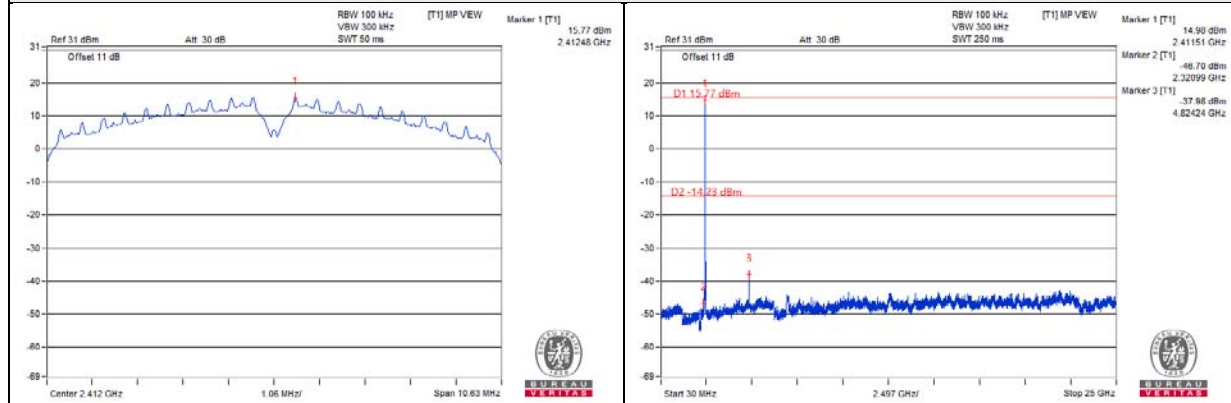


CH 11 Band edge

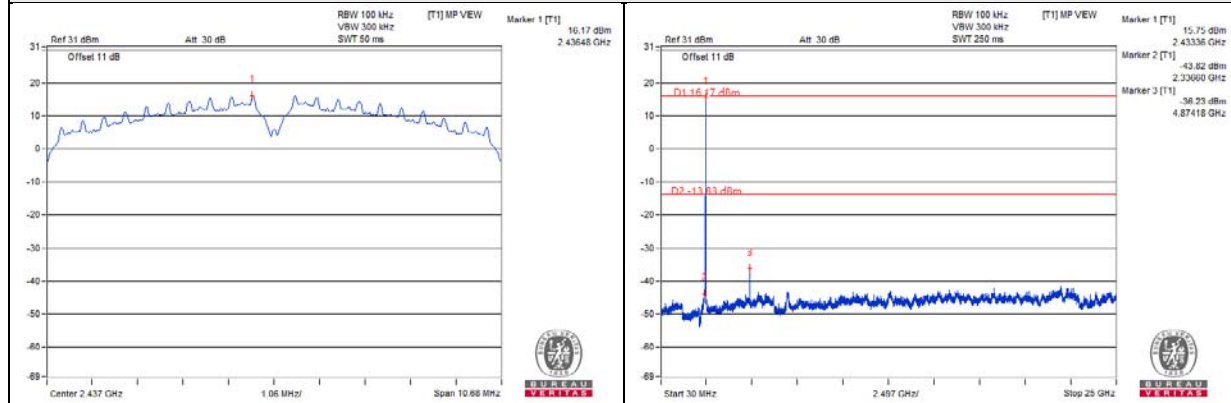


802.11b_Chain 1

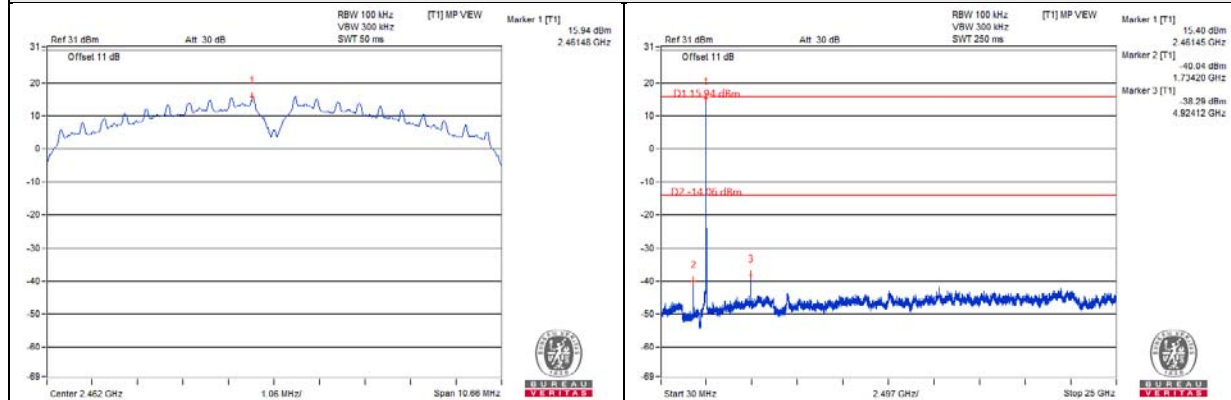
CH 1



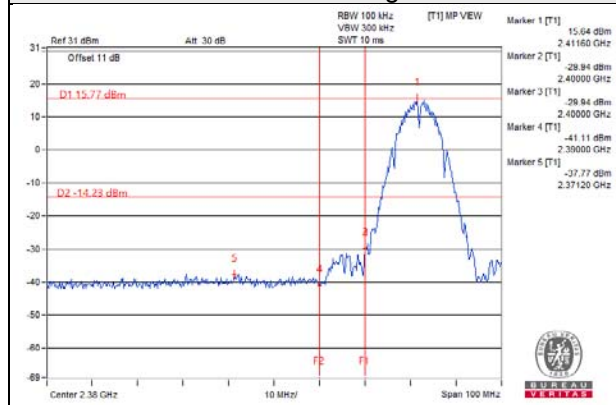
CH 6



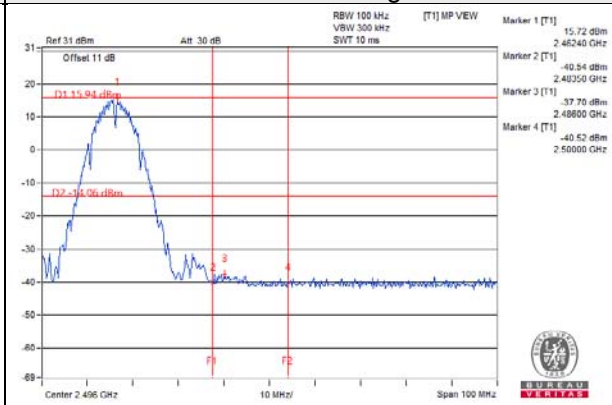
CH 11



CH 1 Band edge

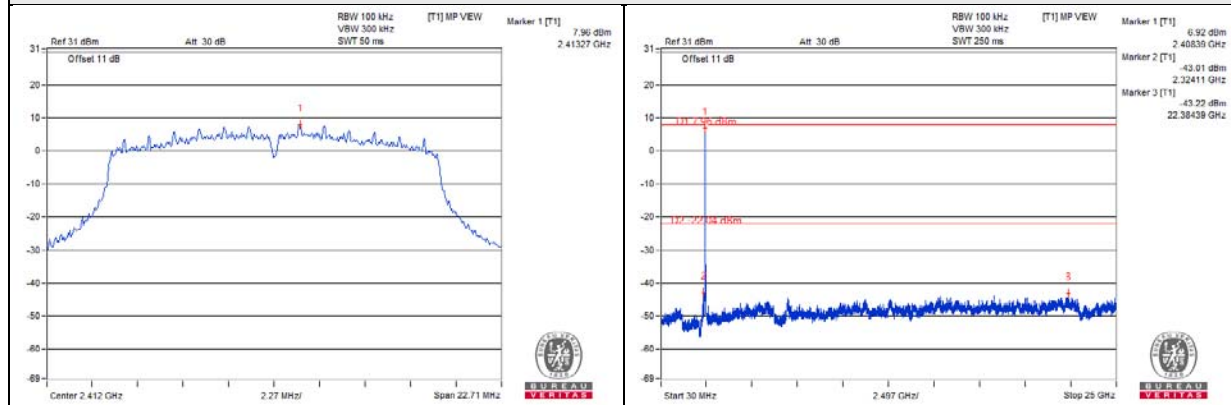


CH 11 Band edge

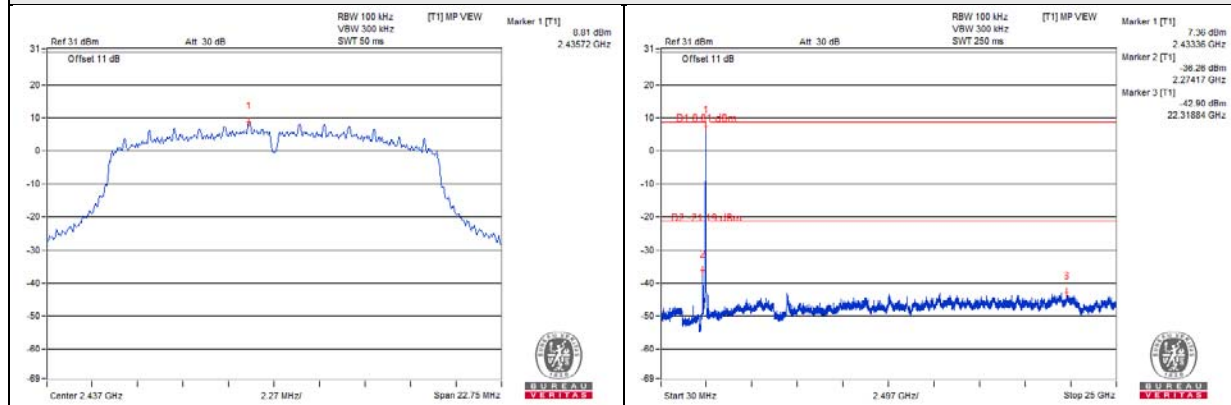


802.11g_Chain 0

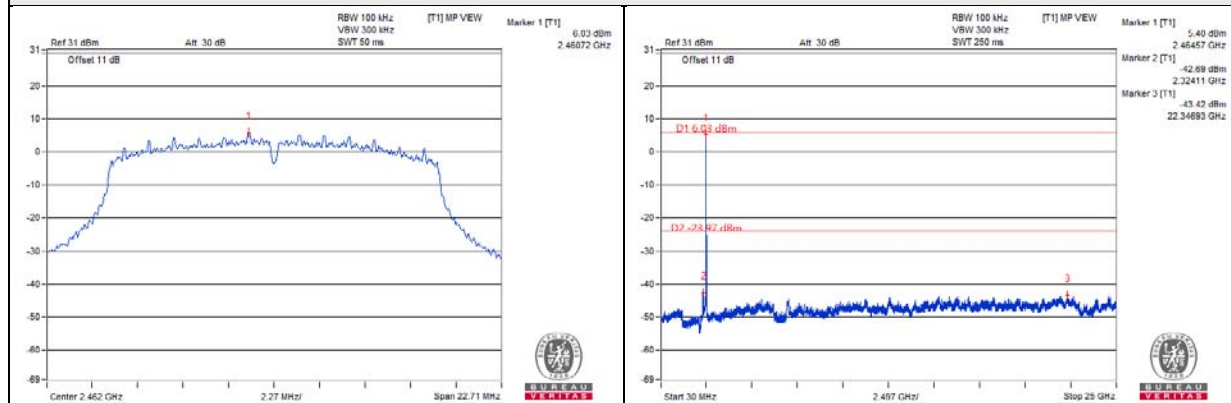
CH 1



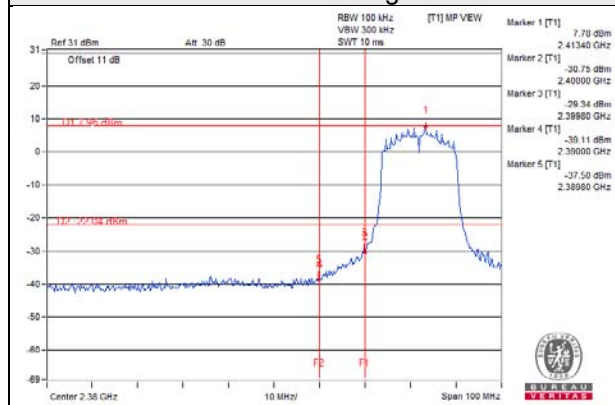
CH 6



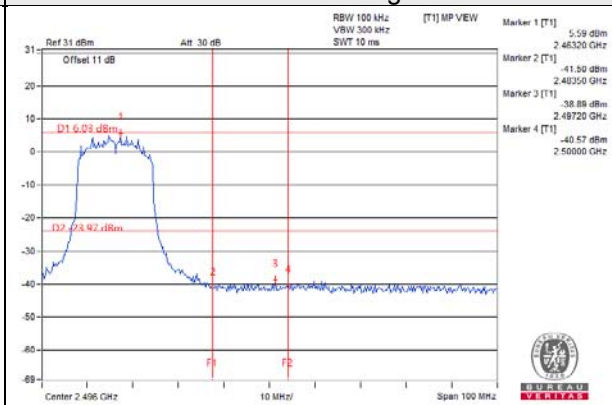
CH 11



CH 1 Band edge

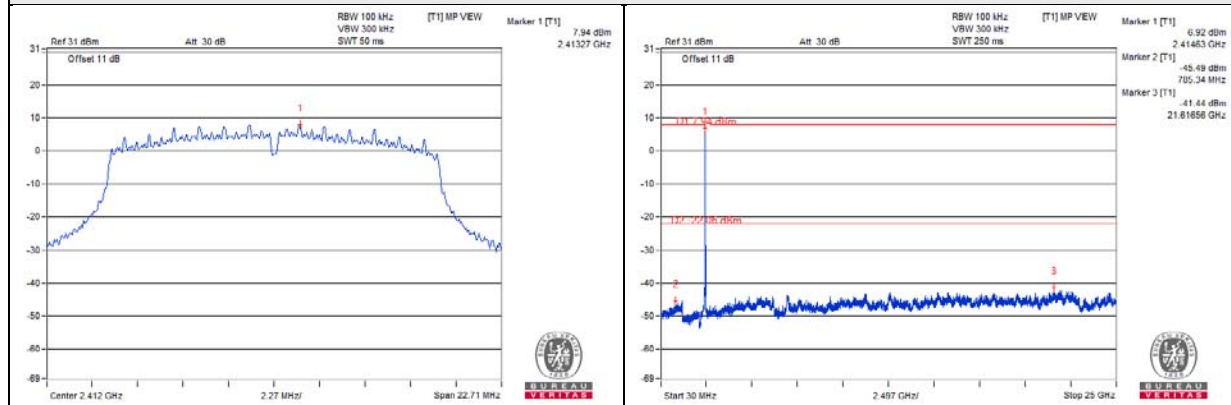


CH 11 Band edge

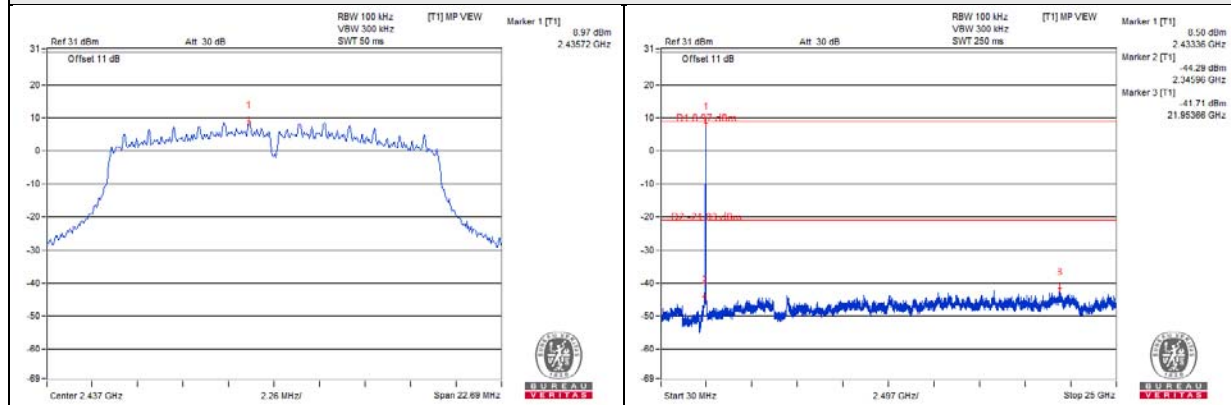


802.11g_Chain 1

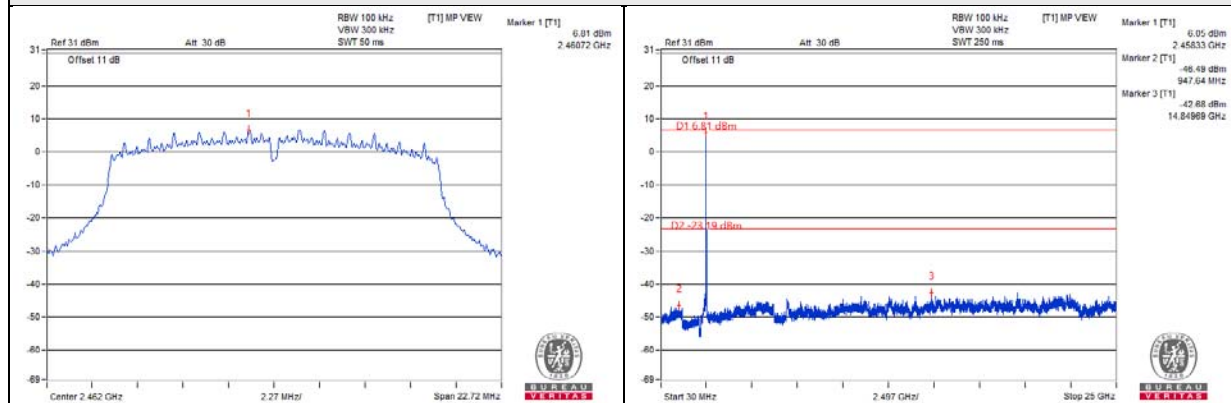
CH 1



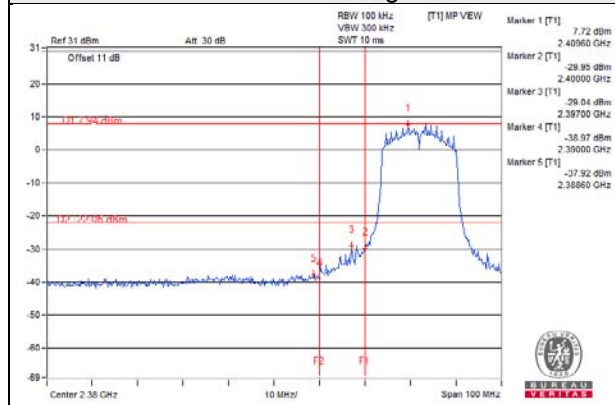
CH 6



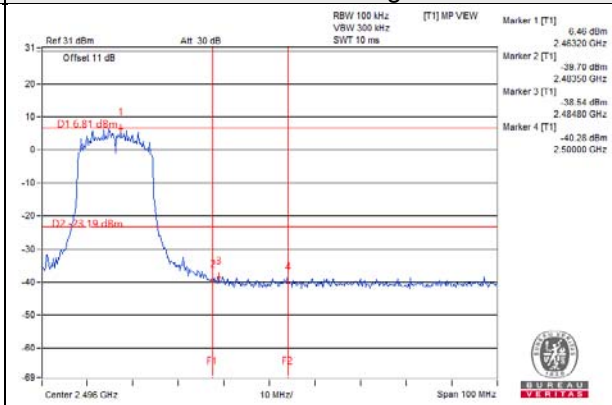
CH 11



CH 1 Band edge

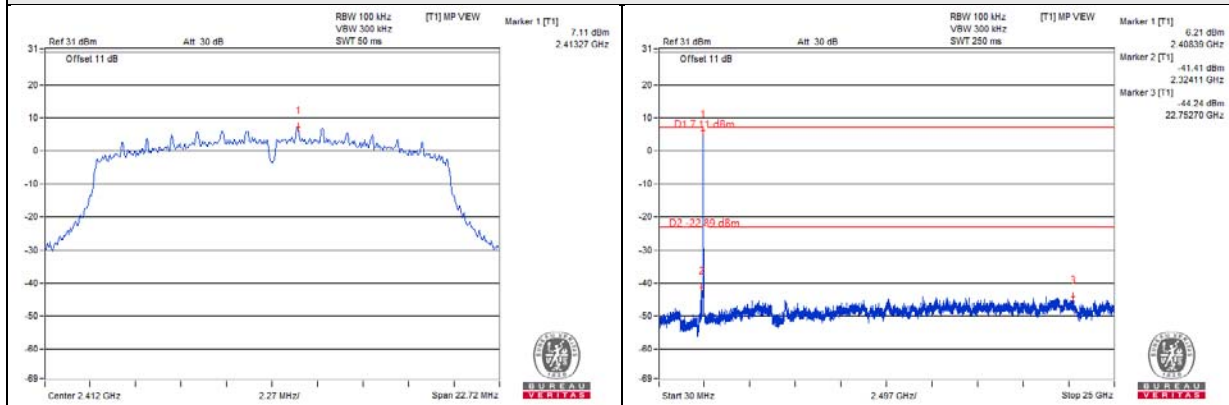


CH 11 Band edge

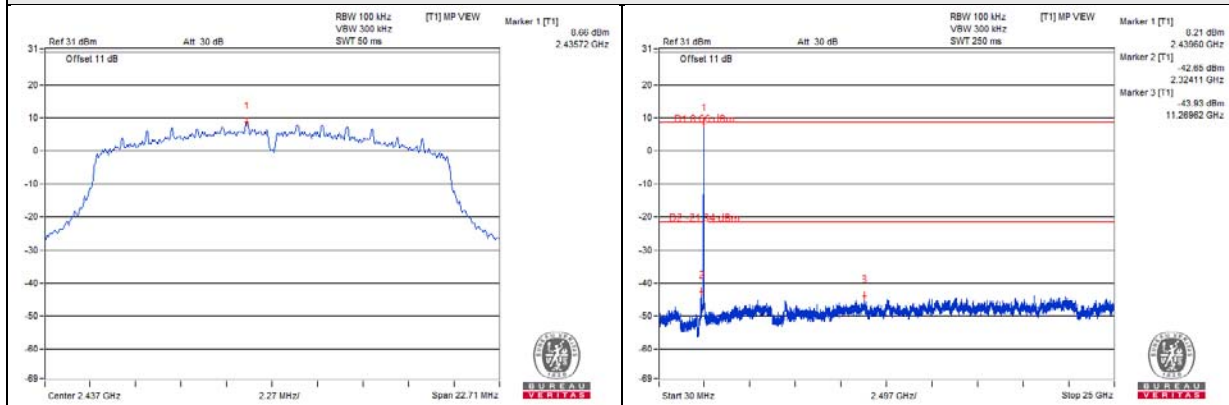


802.11n (VHT20)_Chain 0

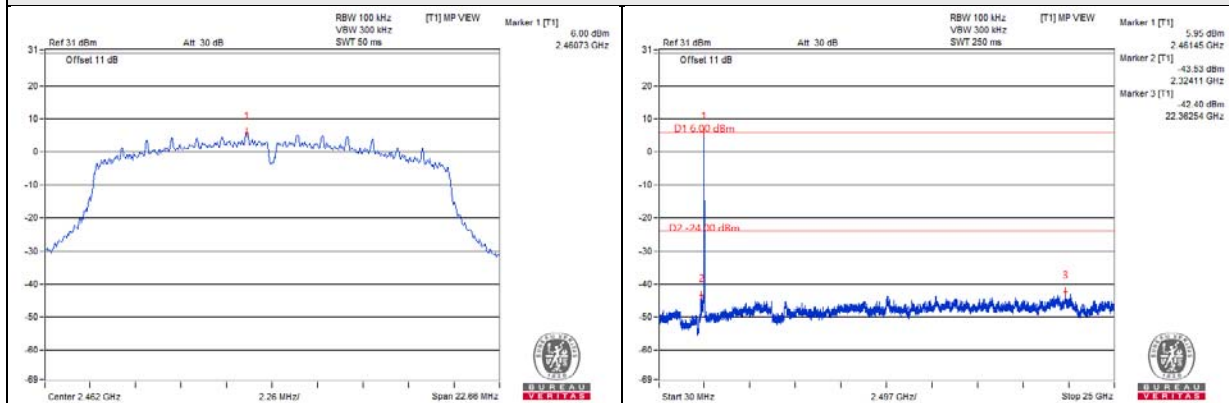
CH 1



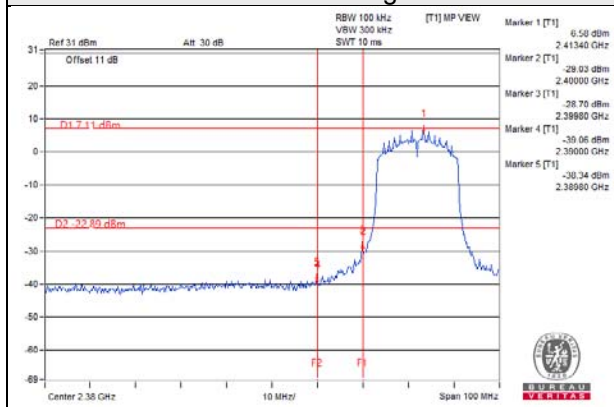
CH 6



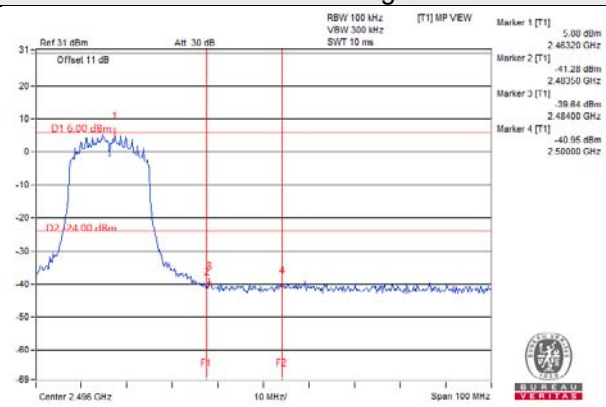
CH 11



CH 1 Band edge

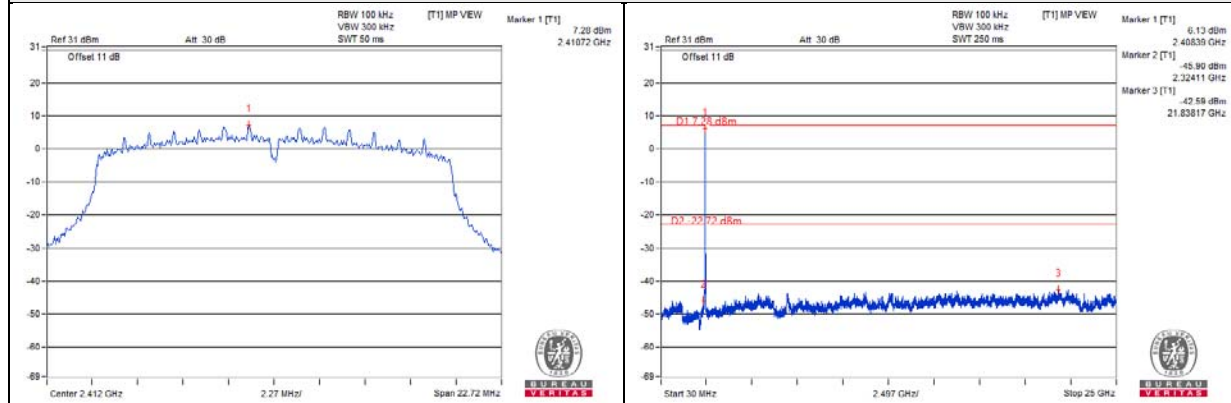


CH 11 Band edge

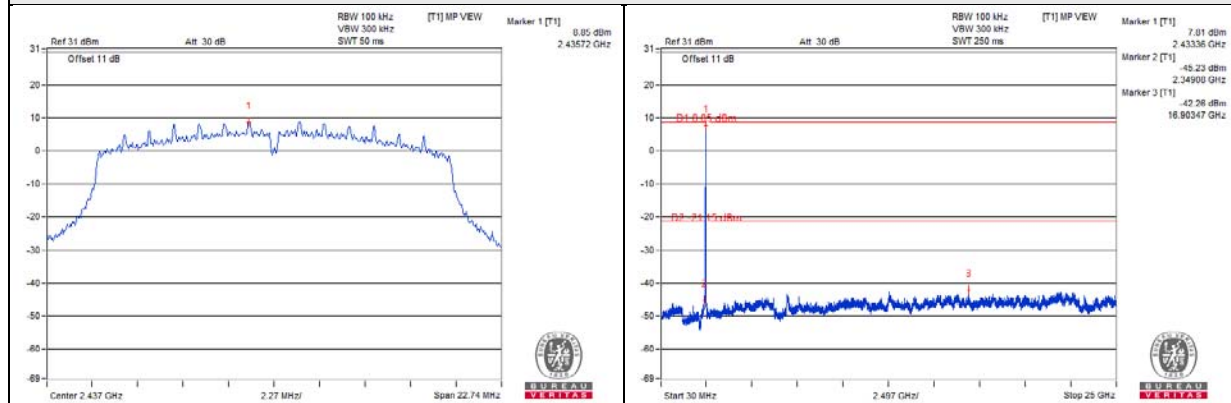


802.11n (VHT20)_Chain 1

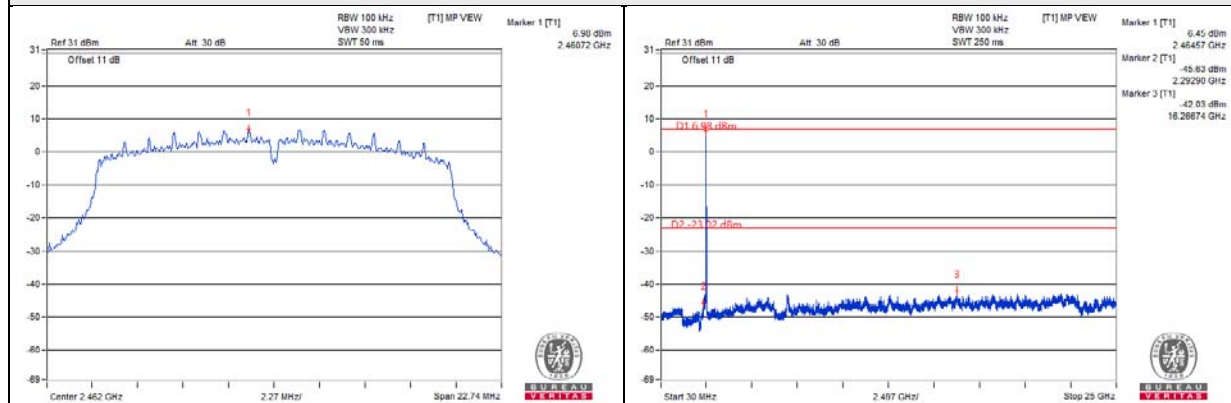
CH 1



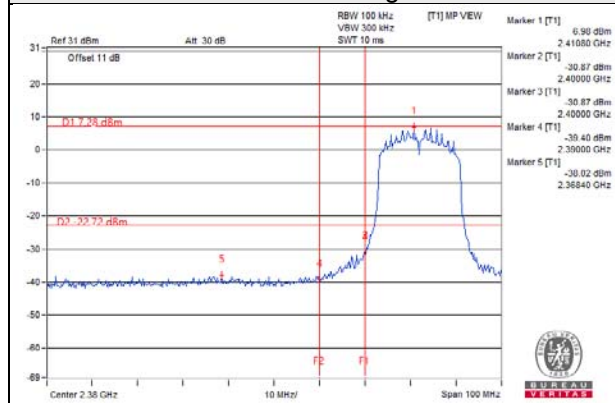
CH 6



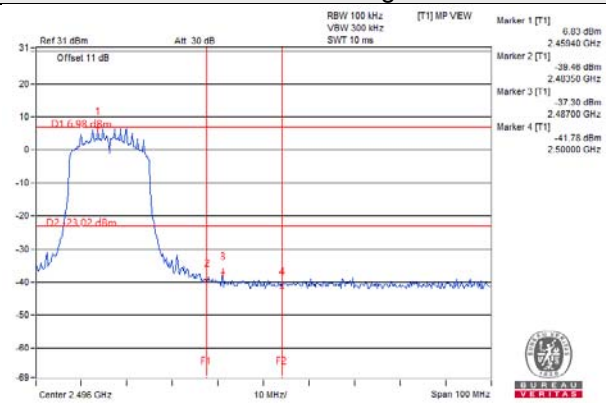
CH 11



CH 1 Band edge

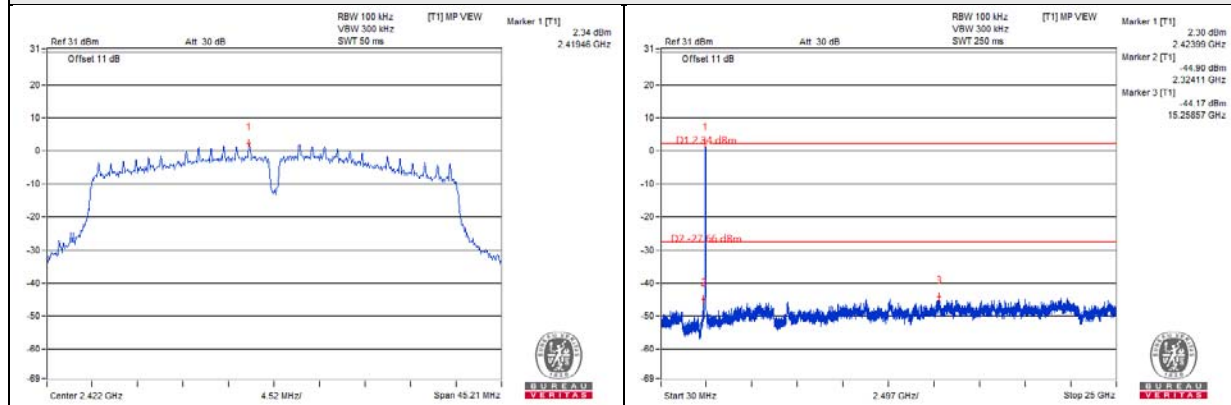


CH 11 Band edge

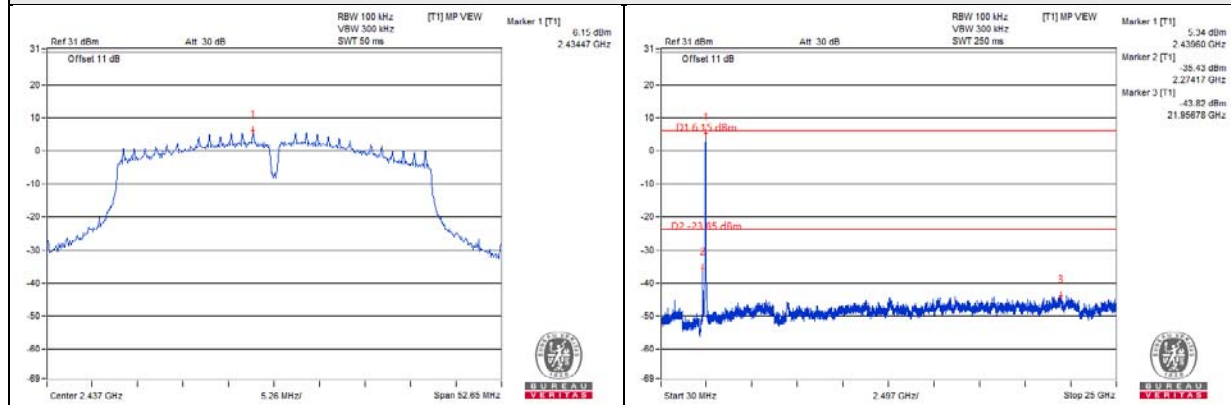


802.11n (VHT40)_Chain 0

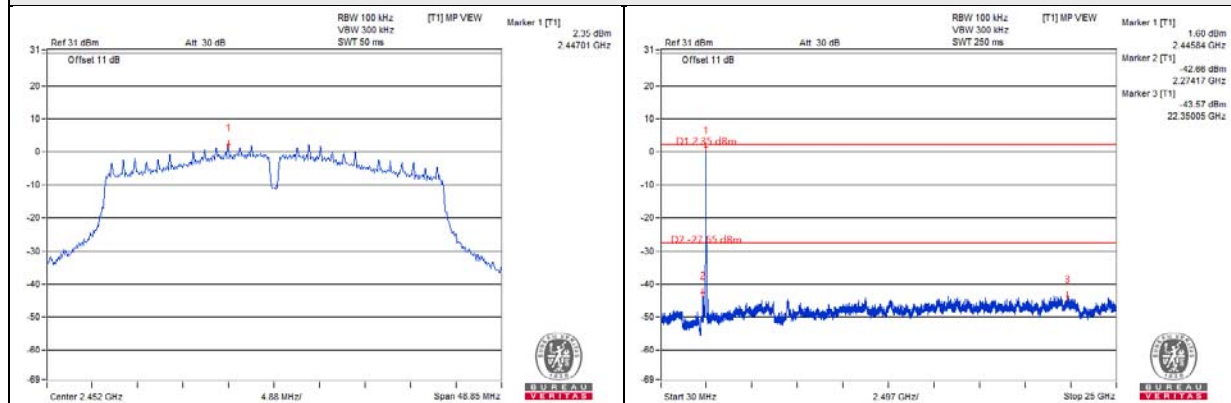
CH 1



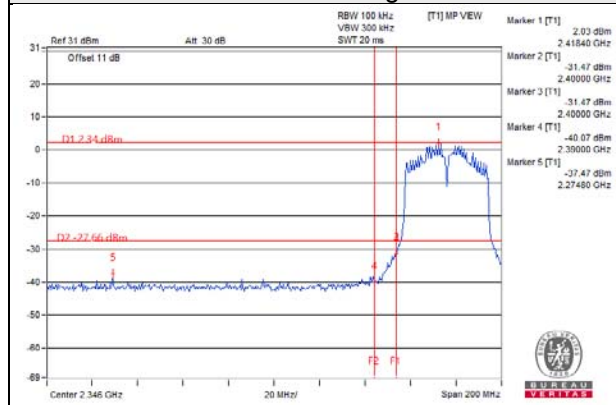
CH 6



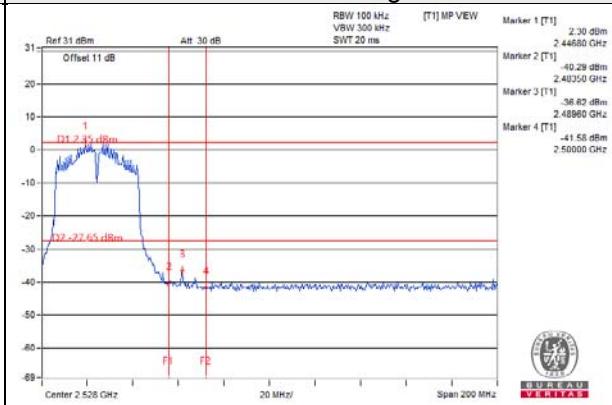
CH 11



CH 1 Band edge

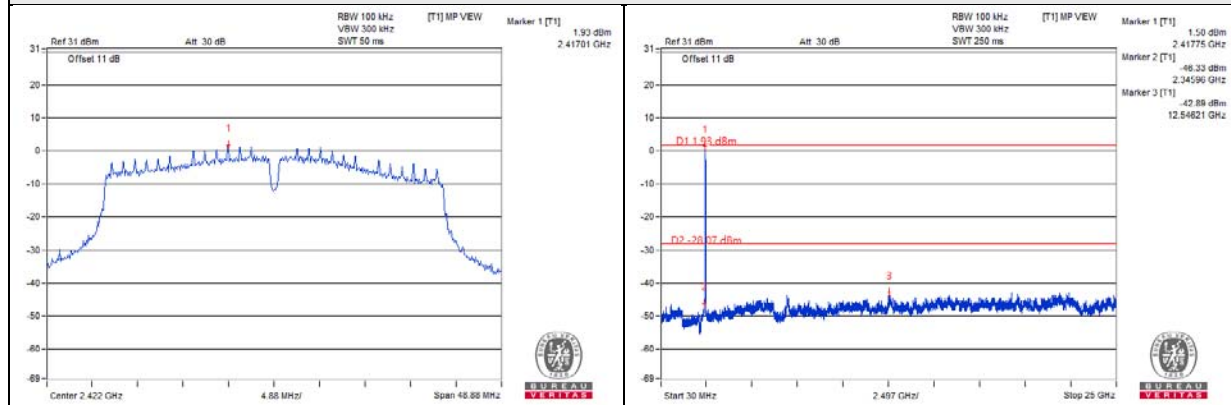


CH 11 Band edge

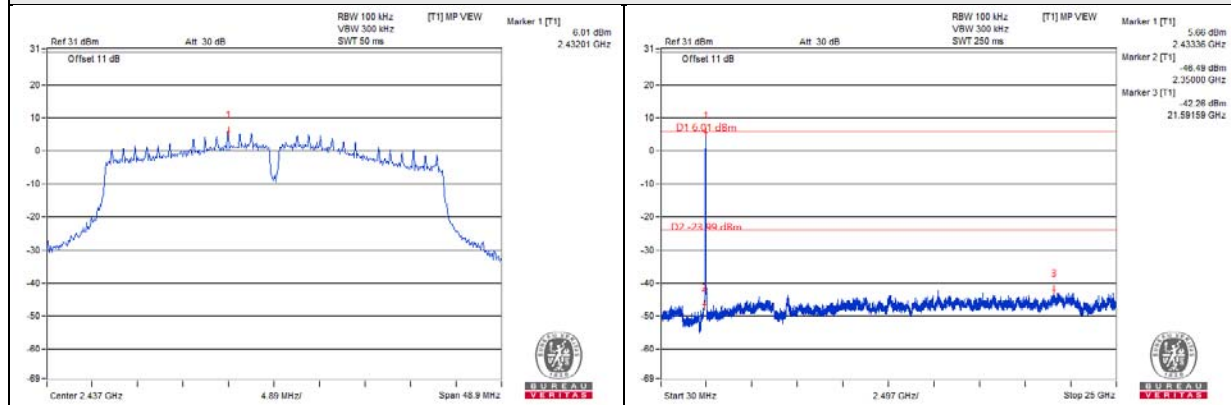


802.11n (VHT40)_Chain 1

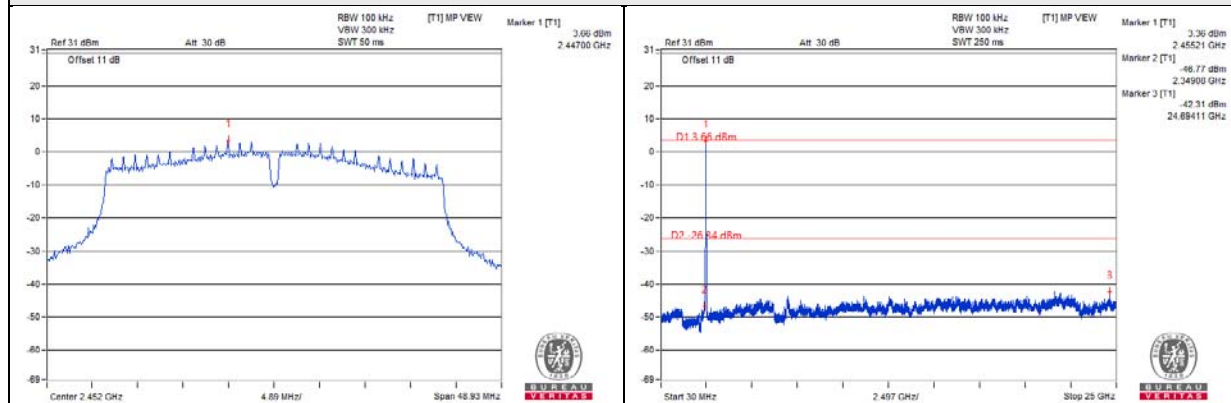
CH 1



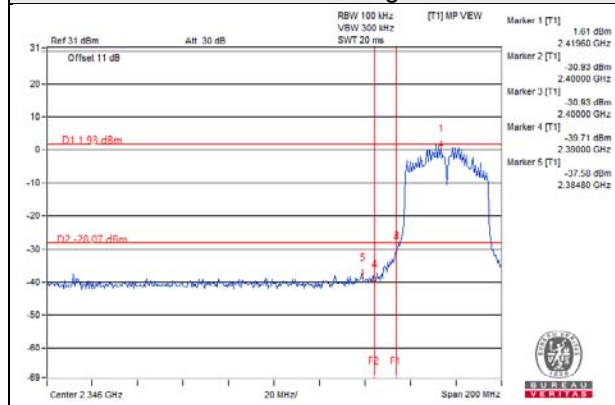
CH 6



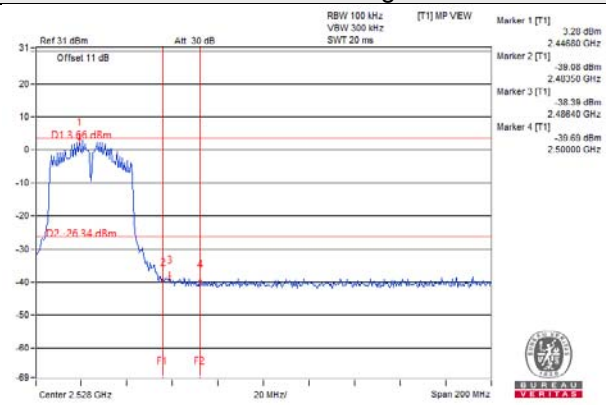
CH 11



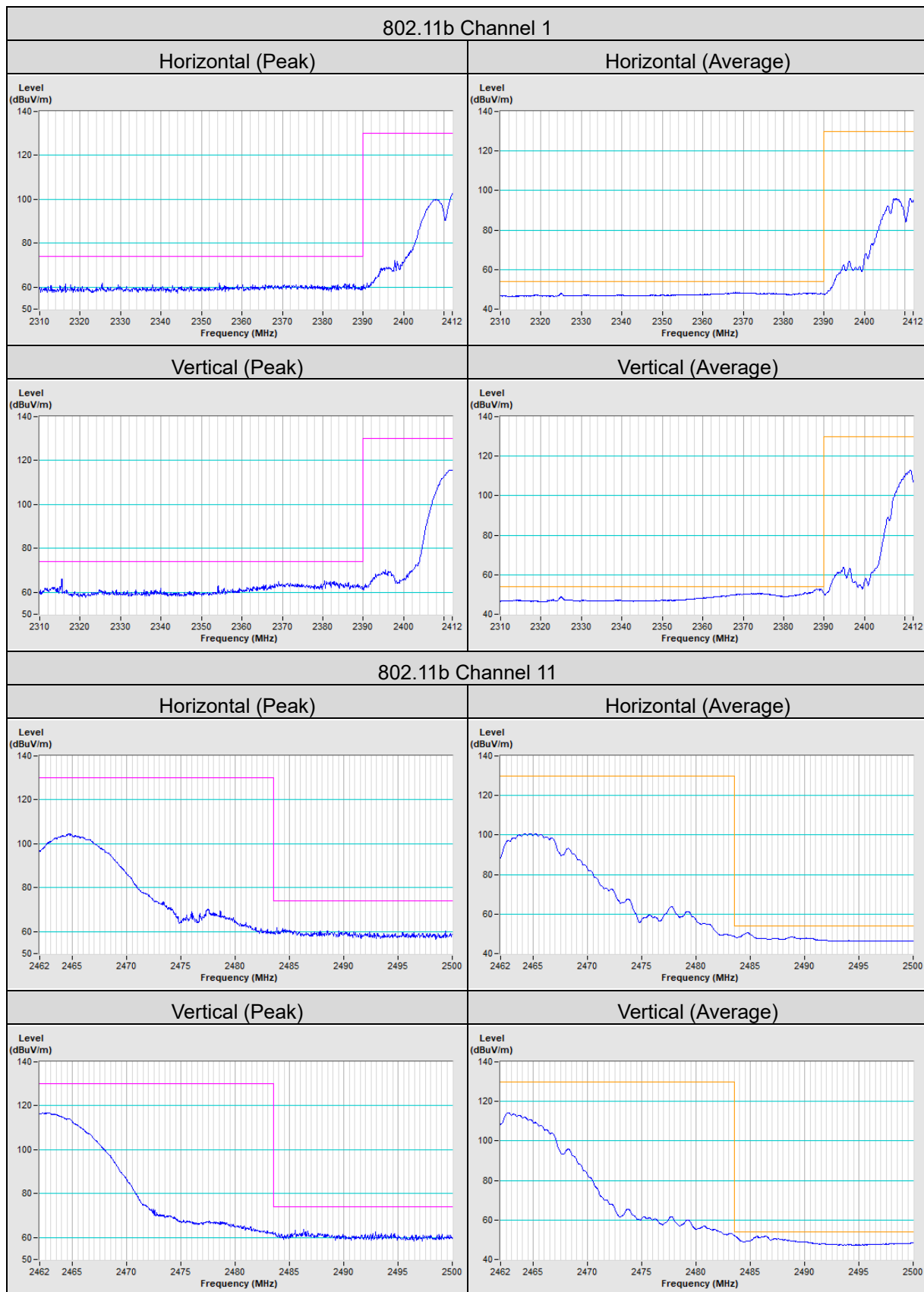
CH 1 Band edge

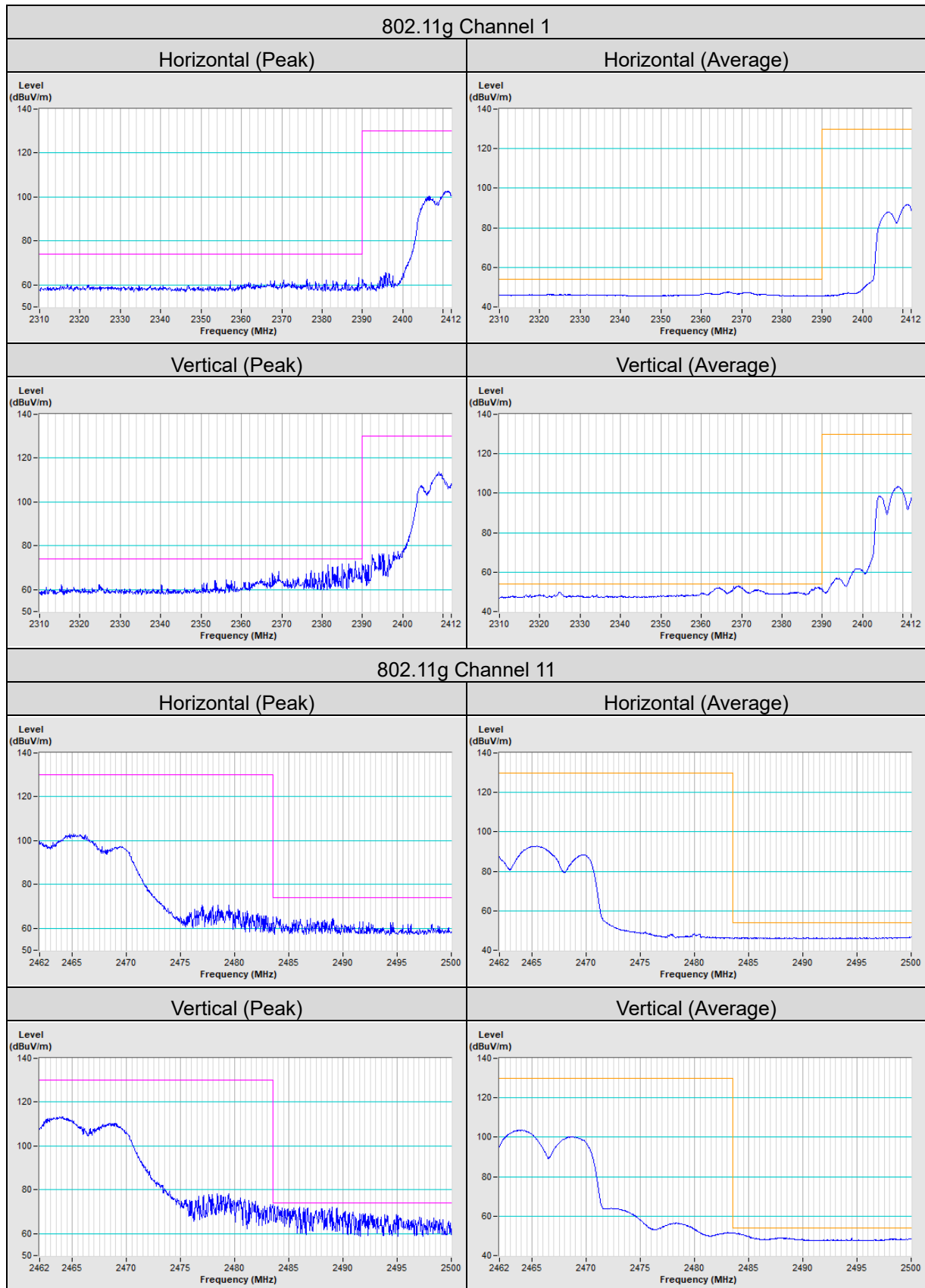


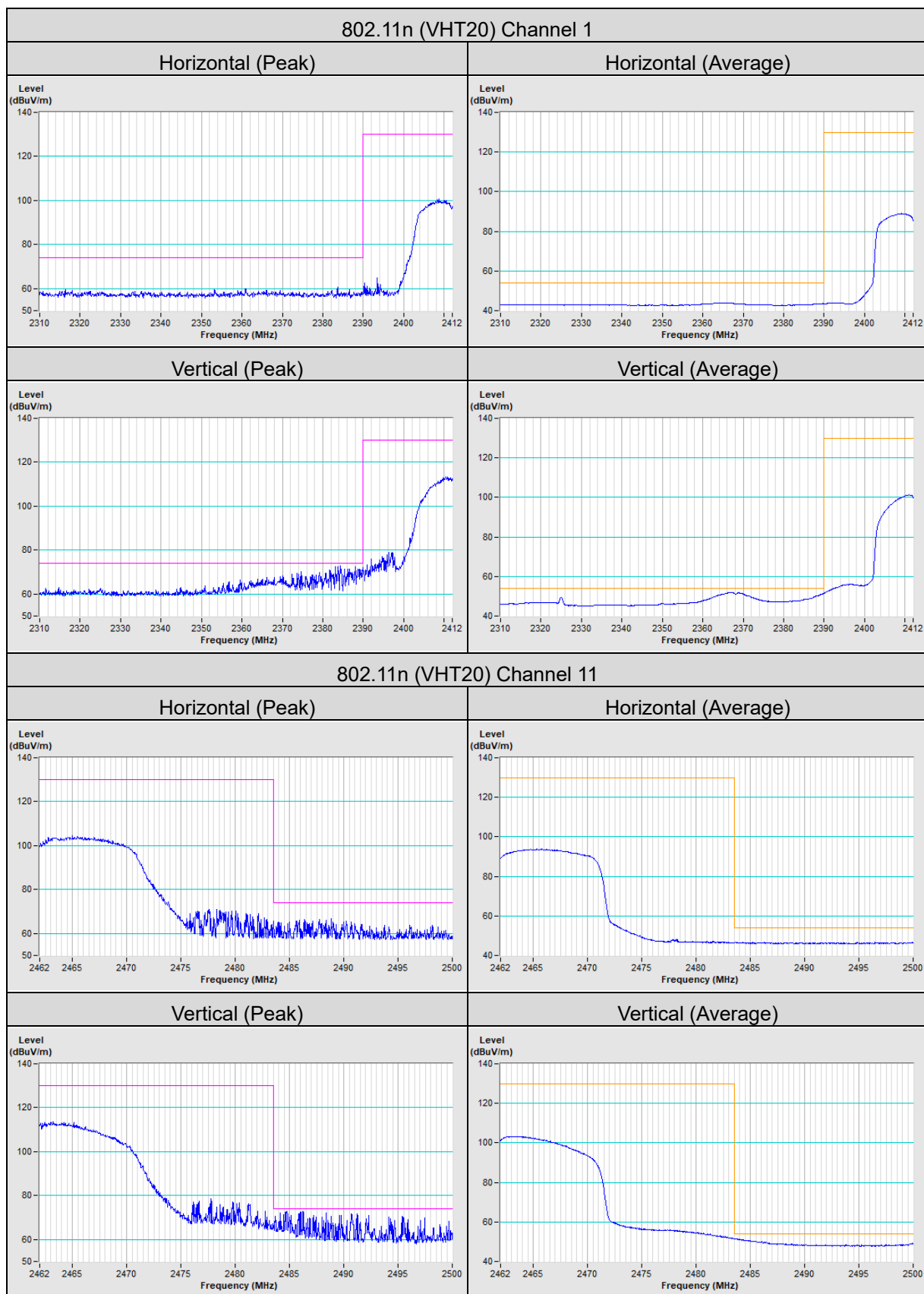
CH 11 Band edge

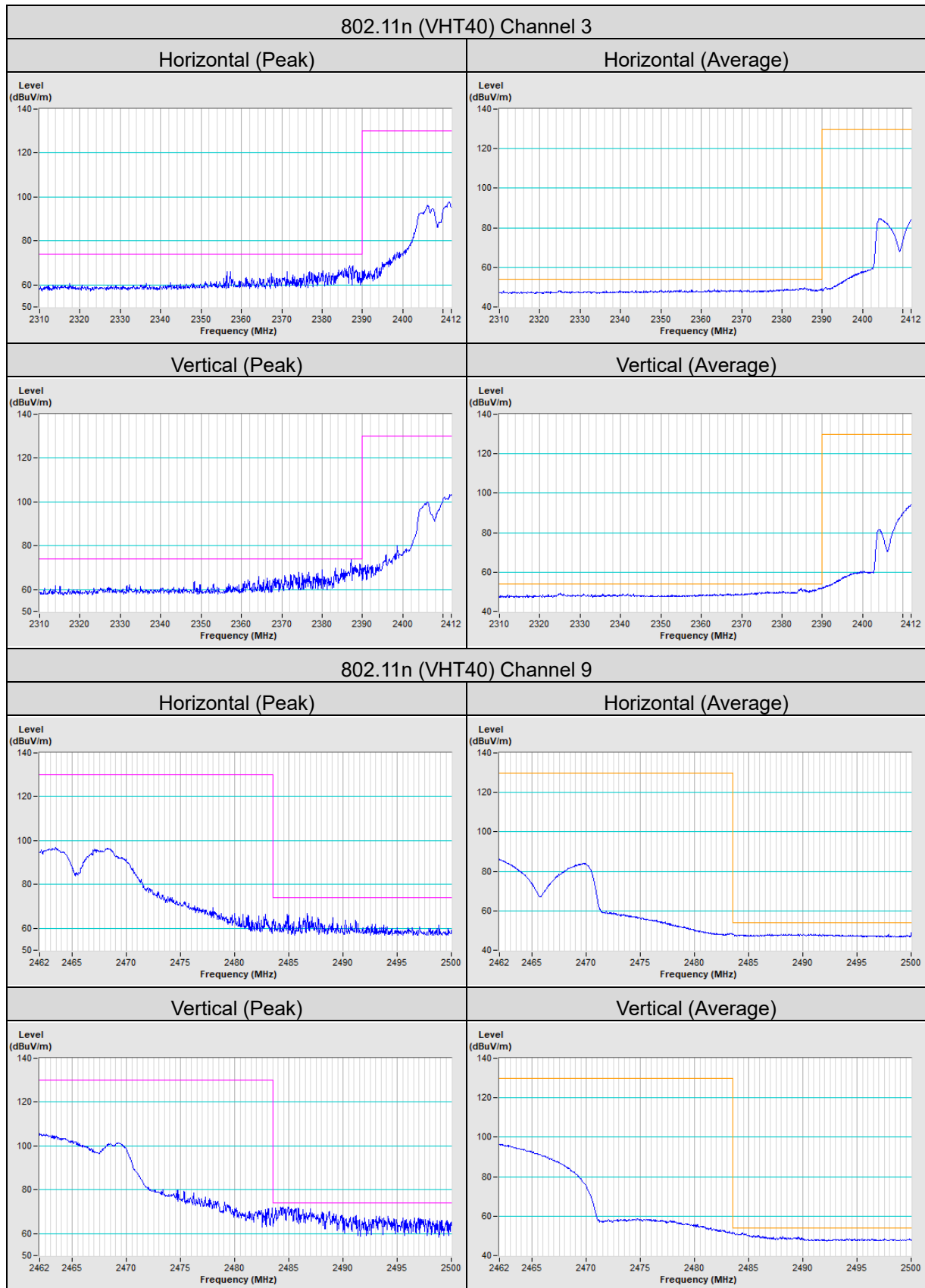


Annex A - Band Edge Measurement









5 Pictures of Test Arrangements

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

Appendix – Information of the Testing Laboratories

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

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Web Site: www.bureauveritas-adt.com

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

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