Test Report

Product Name	WiFi 6 ax1800 2x2 dual concurrent M.2 B key Module
Model No.	PCE2310M
FCC ID	U2M-PCE2310M

Applicant	Senao Networks, Inc.
Address	3F, No. 529, Chung Cheng Rd., Hsintien,Taipei,Taiwan

Date of Receipt	Oct. 12, 2022
Issue Date	Nov. 16, 2022
Report No.	22A0237R-RFUSV01S-A
Report Version	V1.0

Testing Laboratory
3023

The test results relate only to the samples tested.
The test results shown in the test report are traceable to the national/international standard through the calibration report of the equipment and evaluated measurement uncertainty herein.
This report must not be used to claim product endorsement by TAF or any agency of the government.
The test report shall not be reproduced without the written approval of DEKRA Testing and Certification Co., Ltd.
Measurement uncertainties evaluated for each testing system and associated connections are given here to provide the system information for reference. Compliance determinations do not take into account measurement uncertainties for each testing system, but are based on the results of the compliance measurement.

Test Report

Product Name	WiFi 6 ax1800 2x2 dual concurrent M.2 B key Module
Applicant	Senao Networks, Inc.
Address	3F, No. 529, Chung Cheng Rd., Hsintien,Taipei,Taiwan
Manufacturer	Senao Networks, Inc.
Model No.	PCE2310M
FCC ID	U2M-PCE2310M
EUT Rated Voltage	DC 3.7 V
EUT Test Voltage	AC 120 V / 60 Hz (by Adapter) DC 3.7 V (by Test Fixture)
Trade Name	Senao
Applicable Standard	FCC CFR Title 47 Part 15 Subpart C ANSI C63.4: 2014, ANSI C63.10: 2013
Test Result	Complied

Documented By : Joanne Lin

(Senior Project Specialist / Joanne Lin)

Tested By : Bill Lin

(Senior Engineer / Bill Lin)

Approved By : Alan Chen

(Senior Engineer / Alan Chen)

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Appendix 1: EUT Test Photographs
Appendix 2: Product Photos-Please refer to the file: 22A0237R-Product Photos

Revision History

Report No.	Version	Description	Issued Date
22A0237R-RFUSV01S-A	V1.0	Initial issue of report.	Nov. 16, 2022

1. General Information

1.1. EUT Description

Product Name	WiFi 6 ax1800 2x2 dual concurrent M.2 B key Module
Trade Name	Senao
Model No.	PCE2310M
FCC ID	U2M-PCE2310M
Frequency Range	802.11b/g/n/ac/ax-20 MHz: 2412-2462 MHz 802.11n/ac/ax-40 MHz: 2422-2452 MHz
Number of Channels	802.11b/g/n/ac/ax-20 MHz: 11CH, 802.11n/ac/ax-40 MHz: 7CH
Data Speed	802.11b: 1-11 Mbps, 802.11g: 6-54 Mbps, 802.11n: up to 300 Mbps 802.11ac: up to 400 Mbps, 802.11ax: up to 573.6 Mbps
Channel separation	802.11b/g/n/ac/ax: 5 MHz
Type of Modulation	DSSS, DBPSK, DQPSK, CCK OFDM, BPSK, QPSK, 16QAM, 64QAM, 256QAM OFDMA, BPSK, QPSK, 16QAM, 64QAM, 256QAM,1024QAM
Antenna Type	Dipole
Antenna Gain	Refer to the Antenna List
Channel Control	Auto

Antenna List

No.	Manufacturer	Part No.	Antenna Type	Peak Gain
1	AWAN	A8EEE-000001	Dipole	3.23 dBi for 2400 MHz

Note: The antenna of EUT is conforming to FCC 15.203.

For power CDD Directional gain:

3.23 dBi for 2.4 GHz

For CDD mode:

2400 MHz: Directional gain = 3.23 dBi

(Directional gain = $G_{ANT\ MAX}$ + Array Gain, Array Gain = 0 dB for $N_{ANT} \leq 4$)

For power Beamforming Directional gain:

6.24 dBi for 2.4 GHz

For Beamforming mode:

2400 MHz: Directional gain = 6.24 dBi

(Directional gain = $G_{ANT\ MAX}$ + Array Gain, Array Gain = 10*log(2) = 3.01 dB)

For PSD Directional gain: 6.24 dBi for 2.4 GHz

2400 MHz: Directional gain = 6.24 dBi

Directional gain = $10 \log[(10^{G1/20} + 10^{G2/20})^2 / N_{ANT}]$ dBi

802.11b/g/n/ac/ax-20 MHz Center Frequency of Each Channel:

Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
01	2412	02	2417	03	2422	04	2427
05	2432	06	2437	07	2442	08	2447
09	2452	10	2457	11	2462		

802.11n/ac/ax-40 MHz Center Frequency of Each Channel:

Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
03	2422	04	2427	05	2432	06	2437
07	2442	08	2447	09	2452		

Note:

1. The EUT is a WiFi 6 ax1800 2x2 dual concurrent M.2 B key Module with a built-in WLAN transceiver, this report for 2.4 GHz WLAN.
2. Regarding to the operation frequency, the lowest, middle and highest frequency are selected to perform the test. The other channels are for reference only.
3. Lowest data rates are tested in each mode. Only worst case is shown in the report. (802.11b is 1 Mbps, 802.11g is 6 Mbps, 802.11ax-20 MHz/40 MHz is MCS0)
4. The CDD mode and Beamforming mode are presented in the power output test item. For other test items, CDD mode is the worst case for the final test and shown in this report.
5. The spectrum plot against conducted item only shows the worst case.
6. This device does not support partial RU function.
7. These tests are conducted on a sample for the purpose of demonstrating compliance of 802.11b/g/n/ac/ax transmitter with Part 15 Subpart C Paragraph 15.247 of spread spectrum devices.

Test Mode	Mode 1	Transmit (802.11b)-CDD
		Transmit (802.11g)-CDD
		Transmit (802.11ax-20 MHz)-CDD
		Transmit (802.11ax-40 MHz)-CDD
		Transmit (802.11ax-20 MHz)-Beamforming
		Transmit (802.11ax-40 MHz)-Beamforming

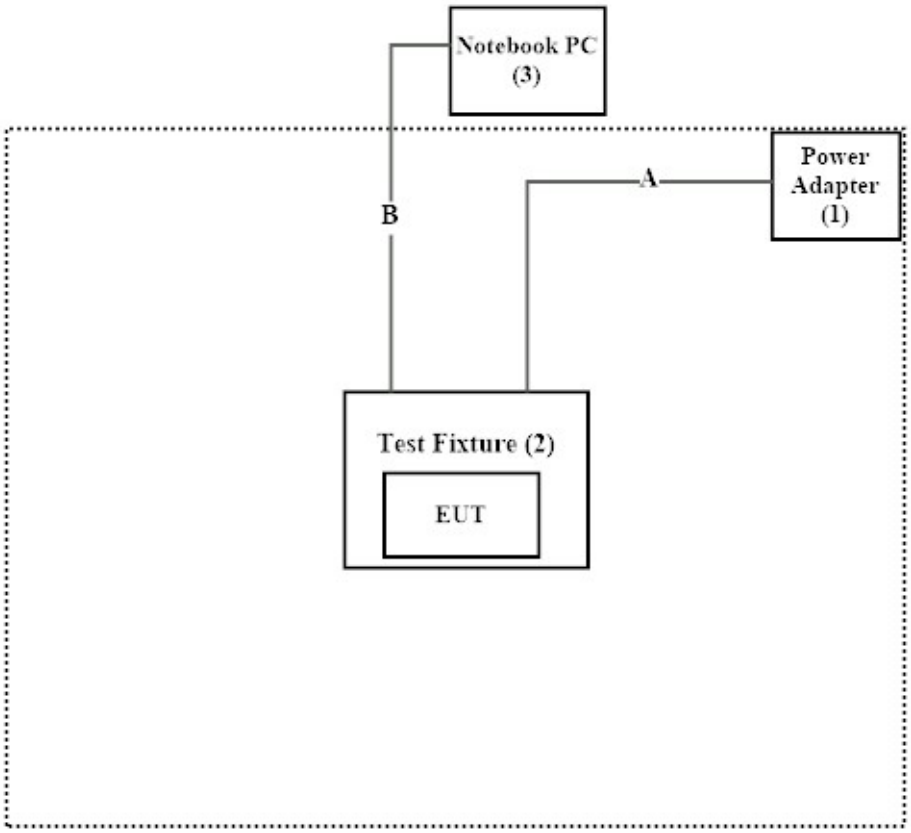
1.2. Tested System Details

The types for all equipment, plus descriptions of all cables used in the tested system (including inserted cards) are:

Product		Manufacturer	Model No.	Serial No.	Power Cord
1	Power Adapter	Senao	WEEQU-1210	N/A	N/A
2	Test Fixture	Senao	N/A	N/A	N/A
3	Notebook PC	DELL	P62G	229FJC2	N/A

Cable Type		Cable Description
A	Power Cable	Non-shielded, 1.1m
B	LAN Cable	Non-shielded, 3m

1.3. Configuration of Tested System



1.4. EUT Exercise Software

1. Setup the EUT as shown in Section 1.3.
2. Execute software “QATool Version 0.0.2.33” on the Notebook PC.
3. Configure the test mode, the test channel, and the data rate.
4. Press “OK” to start the continuous transmit.
5. Verify that the EUT works properly.

1.5. Test Facility

Ambient conditions in the laboratory:

Performed Item	Items	Required	Actual
Conducted Emission	Temperature (°C)	10~40 °C	23.4 °C
	Humidity (%RH)	10~90 %	55.2 %
Radiated Emission	Temperature (°C)	10~40 °C	22.3 °C
	Humidity (%RH)	10~90 %	73.0 %
Conductive	Temperature (°C)	10~40 °C	24.7 °C
	Humidity (%RH)	10~90 %	60.0 %

USA : FCC Registration Number: TW0033

Canada : CAB Identifier Number: TW3023 / Company Number: 26930

Site Description : Accredited by TAF
Accredited Number: 3023

Test Laboratory : DEKRA Testing and Certification Co., Ltd
Address : No. 5-22, Ruishukeng Linkou District, New Taipei City, 24451, Taiwan
Performed Location : No. 26, Huaya 1st Rd., Guishan Dist.,Taoyuan City 333411, Taiwan, R.O.C.
Phone Number : +886-3-275-7255
Fax Number : +886-3-327-8031
Email Address : info.tw@dekra.com
Website : http://www.dekra.com.tw

1.6. List of Test Item and Equipment

For Conduction Measurements / HY-SR01

	Equipment	Manufacturer	Model No.	Serial No.	Cal. Date	Due Date
V	EMI Test Receiver	R&S	ESR7	101601	2022/06/23	2023/06/22
V	Two-Line V-Network	R&S	ENV216	101306	2022/05/23	2023/05/22
V	Two-Line V-Network	R&S	ENV216	101307	2022/07/04	2023/07/03
V	Coaxial Cable	SUHNER	RG400_BNC	RF001	2022/05/24	2023/05/23

Note:
1. All equipments are calibrated every one year.
2. The test instruments marked with "V" are used to measure the final test results.
3. Test Software version: E3 210616 dekra V9.

For Conducted Measurements / HY-SR02

	Equipment	Manufacturer	Model No.	Serial No.	Cal. Date	Due Date
V	Spectrum Analyzer	R&S	FSV30	103466	2021/12/27	2022/12/26
V	Peak Power Analyzer	KEYSIGHT	8990B	MY51000539	2022/05/27	2023/05/26
V	Power Sensor	KEYSIGHT	N1923A	MY59240002	2022/05/19	2023/05/18
V	Power Sensor	KEYSIGHT	N1923A	MY59240003	2022/05/19	2023/05/18

Note:
1. All equipments are calibrated every one year.
2. The test instruments marked with "V" are used to measure the final test results.
3. Test Software version: RF Conducted Test Tools R3 V3.0.1.14.

For Radiated Measurements / HY-CB03

	Equipment	Manufacturer	Model No.	Serial No.	Cal. Date	Due Date
V	Loop Antenna	AMETEK	HLA6121	49611	2022/03/18	2023/03/17
V	Bi-Log Antenna	SCHWARZBECK	VULB9168	9168-675	2021/08/11	2023/08/10
V	Horn Antenna	RF SPIN	DRH18-E	210508A18ES	2022/06/08	2023/06/07
V	Horn Antenna	Com-Power	AH-840	101100	2021/10/04	2023/10/03
V	Pre-Amplifier	SGH	SGH0301-9	20211007-10	2022/02/22	2023/02/21
V	Pre-Amplifier	SGH	PRAMP118	20200701	2022/07/28	2023/07/27
V	Pre-Amplifier	EMCI	EMC05820SE	980310	2022/07/28	2023/07/27
V	Pre-Amplifier	EMCI	EMC184045SE	980369	2022/05/12	2023/05/11
	Coaxial Cable	EMCI	EMC102-KM-KM-600	1160314		
	Coaxial Cable	EMCI	EMC102-KM-KM-7000	170242		
V	Filter	MICRO TRONICS	BRM50702	G269	2022/07/31	2023/07/30
	Filter	MICRO TRONICS	BRM50716	G196	2022/07/27	2023/07/26
V	EMI Test Receiver	R&S	ESR	102793	2021/12/15	2022/12/14
V	Spectrum Analyzer	R&S	FSV3044	101114	2022/02/11	2023/02/10
V	Coaxial Cable	SGH	SGH18	2021005-1	2022/03/18	2023/03/17
	Coaxial Cable	SGH	SGH18	202108-4		
	Coaxial Cable	SGH	SGH18	GD20110223-1		
	Coaxial Cable	SGH	HA800	GD20110222-3		

Note:
1. Bi-Log Antenna and Horn Antenna(AH-840) is calibrated every two years, the other equipments are calibrated every one year.
2. The test instruments marked with "V" are used to measure the final test results.
3. Test Software version: E3 210616 dekra V9.

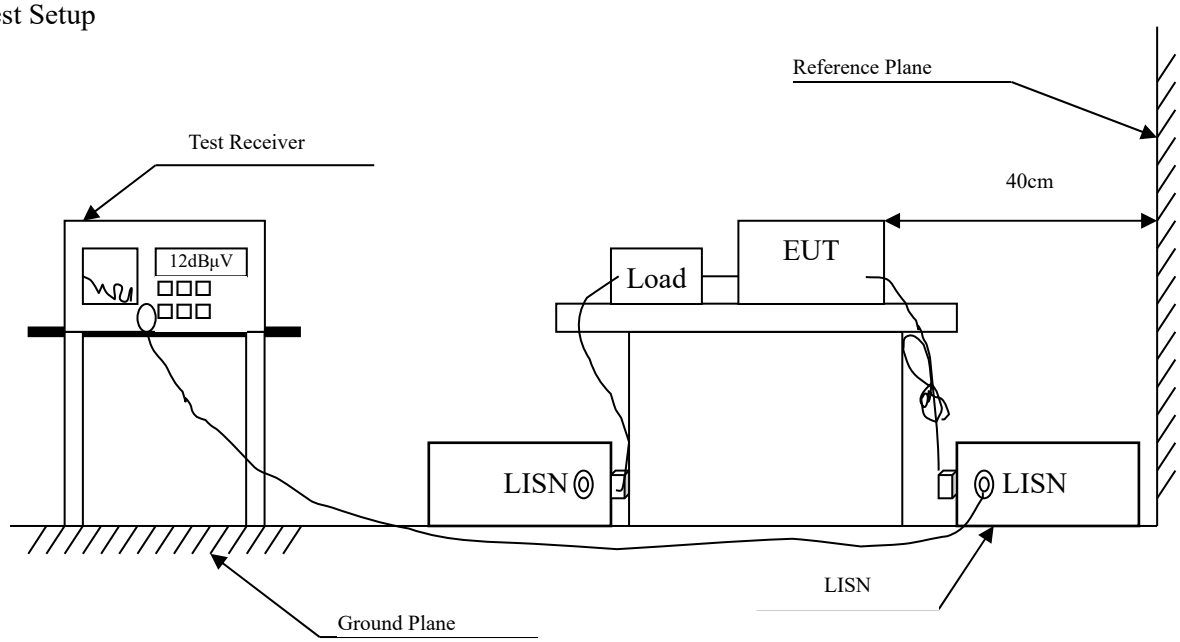
1.7. Uncertainty

Uncertainties have been calculated according to the DEKRA internal document.
The reported expanded uncertainties are based on a standard uncertainty multiplied by a coverage factor of k=2, providing a level of confidence of approximately 95%.
Measurement uncertainties evaluated for each testing system and associated connections are given here to provide the system information for reference. Compliance determinations do not take into account measurement uncertainties for each testing system, but are based on the results of the compliance measurement.

Test Item	**Uncertainty**	
Conducted Emission	±3.42 dB	
Peak Power Output	±0.89 dB	
Radiated Emission	Under 1 GHz ±4.05 dB	Above 1 GHz ±3.73 dB
RF Antenna Conducted Test	±2.06 dB	
Band Edge	Under 1 GHz ±4.05 dB	Above 1 GHz ±3.73 dB
6dB Bandwidth	±1544.74 Hz	
Power Density	±2.06 dB	
Duty Cycle	±2.31 ms	

2. Conducted Emission

2.1. Test Setup



2.2. Limits

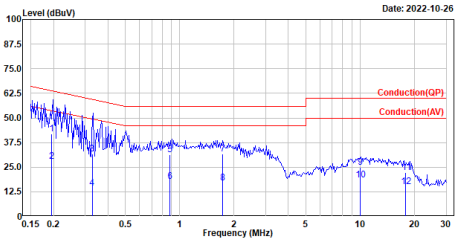
FCC Part 15 Subpart C Paragraph 15.207 (dBµV) Limit		
Frequency MHz	Limits	
	QP	AVG
0.15 - 0.50	66 - 56	56 - 46
0.50 - 5.0	56	46
5.0 - 30	60	50

2.3. Test Procedure

The EUT and simulators are connected to the main power through a line impedance stabilization network (L.I.S.N.). This provides a 50 ohm / 50 µH coupling impedance for the measuring equipment. The peripheral devices are also connected to the main power through a LISN that provides a 50 ohm /50 µH coupling impedance with 50 ohm termination. (Please refers to the block diagram of the test setup and photographs.)
Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.4: 2014 on conducted measurement.
Conducted emissions were invested over the frequency range from 0.15 MHz to 30 MHz using a receiver bandwidth of 9 kHz.

2.4. Test Result of Conducted Emission

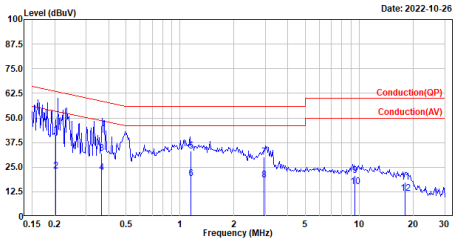
Site :HY-SR01
Condition :Line
Mode :ax40_2437MHz_TX
test by :Jimmy



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	0.196	41.80	63.80	-22.00	32.12	9.68	QP
2	0.196	27.95	53.80	-25.85	18.27	9.68	Average
3	0.328	31.84	59.51	-27.67	22.16	9.68	QP
4	0.328	14.31	49.51	-35.20	4.63	9.68	Average
5	0.884	31.50	56.00	-24.50	21.79	9.71	QP
6	0.884	17.61	46.00	-28.39	7.90	9.71	Average
7	1.728	31.74	56.00	-24.26	21.94	9.80	QP
8	1.728	16.91	46.00	-29.09	7.11	9.80	Average
9	10.003	25.04	60.00	-34.96	14.24	10.80	QP
10	10.003	18.33	50.00	-31.67	7.53	10.80	Average
11	17.886	22.31	60.00	-37.69	11.59	10.72	QP
12	17.886	15.12	50.00	-34.88	4.40	10.72	Average

Note:
1. Level = Read Level + Factor
2. Factor = LISN insertion loss + Cable loss
3. Over Limit = Level - Limit Line

Site :HY-SR01
Condition :Neutral
Mode :ax40_2437MHz_TX
test by :Jimmy



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	0.203	41.47	63.48	-22.01	31.81	9.66	QP
2	0.203	22.98	53.48	-30.50	13.32	9.66	Average
3	0.366	32.13	58.60	-26.47	22.47	9.66	QP
4	0.366	22.38	48.60	-26.22	12.72	9.66	Average
5	1.155	33.03	56.00	-22.97	23.32	9.71	QP
6	1.155	19.31	46.00	-26.69	9.60	9.71	Average
7	2.955	30.11	56.00	-25.89	19.98	10.13	QP
8	2.955	18.56	46.00	-27.44	8.43	10.13	Average
9	9.421	20.64	60.00	-39.36	9.84	10.80	QP
10	9.421	15.08	50.00	-34.92	4.28	10.80	Average
11	17.957	17.53	60.00	-42.47	6.73	10.80	QP
12	17.957	11.88	50.00	-38.12	1.08	10.80	Average

Note:
1. Level = Read Level + Factor
2. Factor = LISN insertion loss + Cable loss
3. Over Limit = Level - Limit Line

3. Maximum Power Output

3.1. Test Setup

3.2. Limits

The maximum peak power shall be less 1 Watt.

3.3. Test Procedure

The EUT was tested according to C63.10:2013 for compliance to FCC 47CFR 15.247 requirements. The maximum peak conducted output power using C63.10:2013 Section 11.9.1.3 PKPM1 Peak power meter method. The maximum average conducted output power using C63.10:2013 Section 11.9.2.3 Measurement using a power meter (PM). (Measurement using a gated RF average-reading power meter). The maximum conducted output power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

For CDD mode:

2400 MHz: Directional gain = 3.23 dBi, Limit= 30 dBm

(Directional gain = $G_{ANT\ MAX}$ + Array Gain, Array Gain = 0 dB for $N_{ANT} \leq 4$)

For Beamforming mode:

2400 MHz: Directional gain = 6.24 dBi, Limit= 29.76 dBm

(Directional gain = $G_{ANT\ MAX}$ + Array Gain, Array Gain = 10*log(2) = 3.01 dB)

3.4. Test Result of Maximum Power Output

Product	:	WiFi 6 ax1800 2x2 dual concurrent M.2 B key Module
Test Item	:	Maximum Power Output Data
Test Mode	:	Transmit (802.11b)-CDD
Test Date	:	2022/10/19

Channel No.	Frequency (MHz)	Data Rate (Mbps)	Chain A Power (dBm)	Chain B Power (dBm)	Chain A+B Power (dBm)	Limit (dBm)	Result
01	2412	1	20.84	20.66	23.76	<30	Pass
06	2437	1	21.20	21.62	24.43	<30	Pass
11	2462	1	21.34	21.16	24.26	<30	Pass

Note: Peak Power Output Value (dBm) = 10*LOG (Chain A (mW) + Chain B (mW))

Product : WiFi 6 ax1800 2x2 dual concurrent M.2 B key Module
Test Item : Maximum Power Output Data
Test Mode : Transmit (802.11g)-CDD
Test Date : 2022/10/19

Channel No.	Frequency (MHz)	Data Rate (Mbps)	Chain A Power (dBm)	Chain B Power (dBm)	Chain A+B Power (dBm)	Limit (dBm)	Result
01	2412	6	16.93	16.51	19.74	<30	Pass
06	2437	6	21.54	21.81	24.69	<30	Pass
11	2462	6	17.92	17.82	20.88	<30	Pass

Note: Peak Power Output Value (dBm) = 10*LOG (Chain A (mW) + Chain B (mW))

Product : WiFi 6 ax1800 2x2 dual concurrent M.2 B key Module
Test Item : Maximum Power Output Data
Test Mode : Transmit (802.11ax-20 MHz)-CDD
Test Date : 2022/10/19

Channel No.	Frequency (MHz)	Data Rate	Chain A Power (dBm)	Chain B Power (dBm)	Chain A+B Power (dBm)	Limit (dBm)	Result
01	2412	MCS0	15.78	15.36	18.59	<30	Pass
06	2437	MCS0	20.81	20.96	23.90	<30	Pass
11	2462	MCS0	18.37	18.17	21.28	<30	Pass

Note: Peak Power Output Value (dBm) = 10*LOG (Chain A (mW) + Chain B (mW))

Product : WiFi 6 ax1800 2x2 dual concurrent M.2 B key Module
Test Item : Maximum Power Output Data
Test Mode : Transmit (802.11ax-40 MHz)-CDD
Test Date : 2022/10/19

Channel No.	Frequency (MHz)	Data Rate	Chain A Power (dBm)	Chain B Power (dBm)	Chain A+B Power (dBm)	Limit (dBm)	Result
03	2422	MCS0	15.05	14.51	17.80	<30	Pass
06	2437	MCS0	16.37	16.39	19.39	<30	Pass
09	2452	MCS0	15.77	15.83	18.81	<30	Pass

Note: Peak Power Output Value (dBm) = 10*LOG (Chain A (mW) + Chain B (mW))

Product : WiFi 6 ax1800 2x2 dual concurrent M.2 B key Module
Test Item : Maximum Power Output Data
Test Mode : Transmit (802.11ax-20 MHz)-Beamforming
Test Date : 2022/11/01

Channel No.	Frequency (MHz)	Data Rate	Chain A Power (dBm)	Chain B Power (dBm)	Chain A+B Power (dBm)	Limit (dBm)	Result
01	2412	MCS0	12.77	12.35	15.58	<29.76	Pass
06	2437	MCS0	17.80	17.95	20.89	<29.76	Pass
11	2462	MCS0	15.36	15.16	18.27	<29.76	Pass

Note: Peak Power Output Value (dBm) = 10*LOG (Chain A (mW) + Chain B (mW)

Product : WiFi 6 ax1800 2x2 dual concurrent M.2 B key Module
Test Item : Maximum Power Output Data
Test Mode : Transmit (802.11ax-40 MHz)-Beamforming
Test Date : 2022/11/01

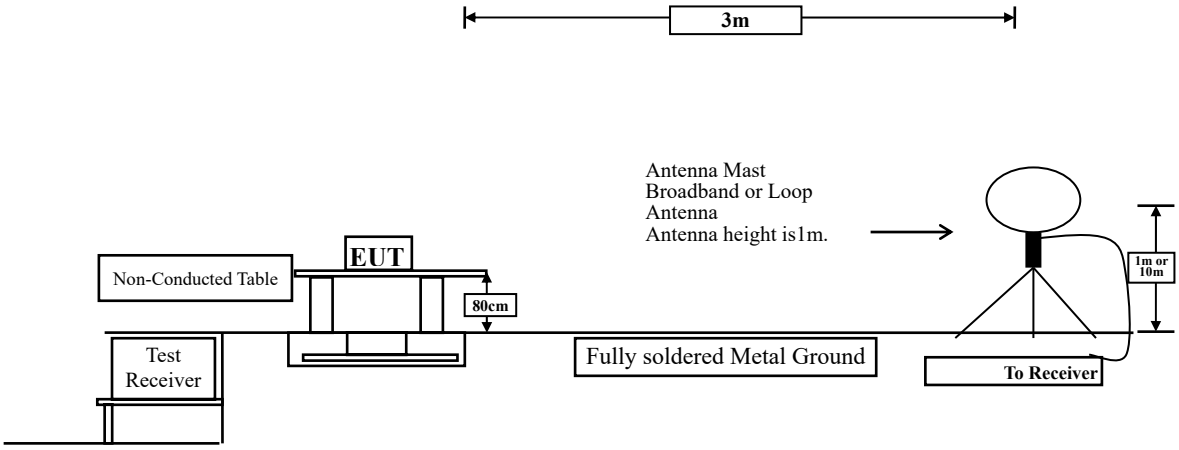
Channel No.	Frequency (MHz)	Data Rate	Chain A Power (dBm)	Chain B Power (dBm)	Chain A+B Power (dBm)	Limit (dBm)	Result
03	2422	MCS0	12.04	11.50	14.79	<29.76	Pass
06	2437	MCS0	13.36	13.38	16.38	<29.76	Pass
09	2452	MCS0	12.76	12.82	15.80	<29.76	Pass

Note: Peak Power Output Value (dBm) = 10*LOG (Chain A (mW) + Chain B (mW)

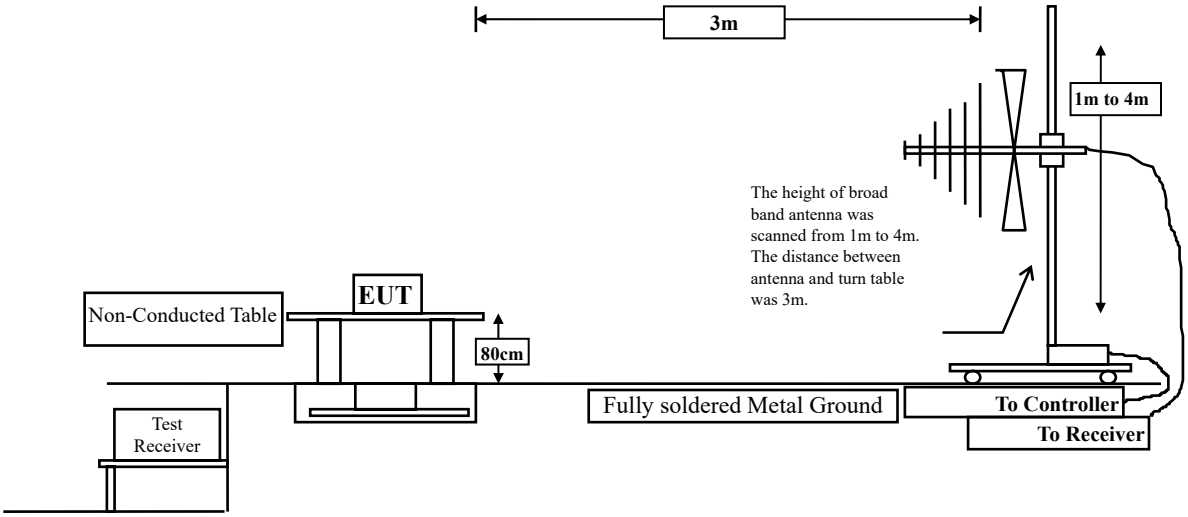
4. Radiated Emission

4.1. Test Setup

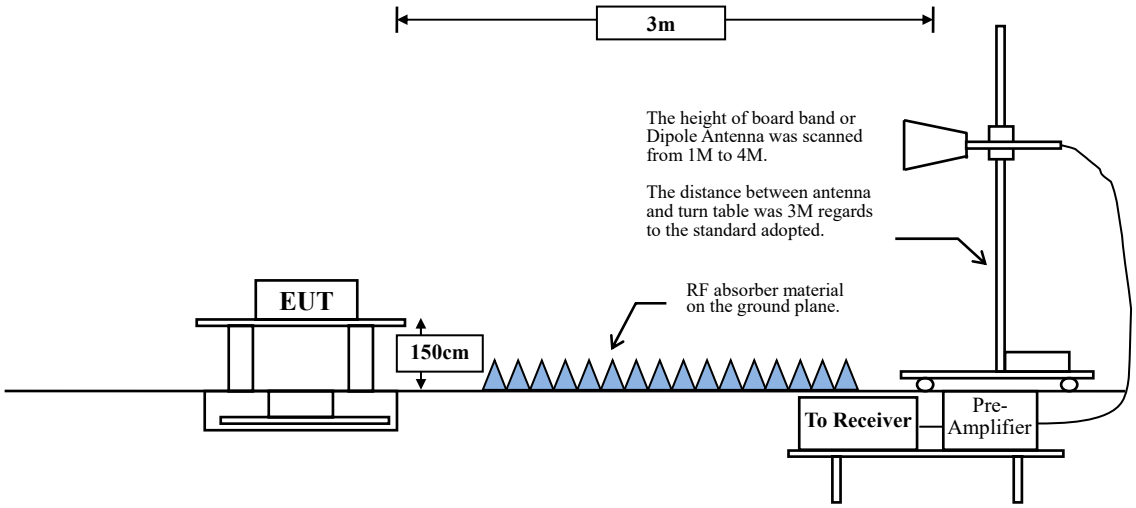
Radiated Emission Under 30 MHz



Radiated Emission Below 1 GHz



Radiated Emission Above 1 GHz



4.2. Limits

➢ **General Radiated Emission Limits**

Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 20dB below the level of the fundamental or to the general radiated emission limits in paragraph 15.209, whichever is the lesser attenuation.

FCC Part 15 Subpart C Paragraph 15.209 Limits		
Frequency MHz	Field strength (microvolts/meter)	Measurement distance (meter)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30	30	30
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

Remarks:

1. RF Voltage (dBμV) = 20 log RF Voltage (μV)
2. In the Above Table, the tighter limit applies at the band edges.
3. Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.

4.3. Test Procedure

The EUT was setup according to ANSI C63.10: 2013 and tested according to C63.10:2013 Section 11.12.1 for compliance to FCC 47CFR 15.247 requirements.

Measuring the frequency range below 1GHz, the EUT is placed on a turn table which is 0.8 meter above ground,when measuring the frequency range above 1GHz, the EUT is placed on a turn table which is 1.5 meter above ground.

The turn table is rotated 360 degrees to determine the position of the maximum emission level.

The EUT was positioned such that the distance from antenna to the EUT was 3 meters.

The antenna is scanned between 1 meter and 4 meters to find out the maximum emission level. This is repeated for both horizontal and vertical polarization of the antenna. In order to find the maximum emission, all of the interface cables were manipulated according to ANSI C63.10: 2013 on radiated measurement.

The resolution bandwidth below 30MHz setting on the field strength meter is 9kHz and 30MHz~1GHz is 120kHz and above 1GHz is 1MHz.

Radiated emission measurements below 30MHz are made using Loop Antenna and 30MHz~1GHz are made using broadband Bilog antenna and above 1GHz are made using Horn Antennas.

The measurement is divided into the Preliminary Measurement and the Final Measurement.

The suspected frequencies are searched for in Preliminary Measurement with the measurement antenna kept pointed at the source of the emission both in azimuth and elevation, with the polarization of the antenna oriented for maximum response. The antenna is pointed at an angle towards the source of the emission, and the EUT is rotated in both height and polarization to maximize the measured emission. The emission is kept within the illumination area of the 3 dB bandwidth of the antenna.

The measurement frequency range form 9kHz - 10th Harmonic of fundamental was investigated.

RBW and VBW Parameter setting:

According to C63.10 Section 11.12.2.4 Peak measurement procedure.

RBW = as specified in Table 1.

VBW ≥ 3 x RBW.

Table 1 - RBW as a function of frequency

Frequency	RBW
9-150 kHz	200-300 Hz
0.15-30 MHz	9-10 kHz
30-1000 MHz	100-120 kHz
> 1000 MHz	1 MHz

According to C63.10 Section 11.12.2.5 Average measurement procedure.

RBW = 1 MHz.

VBW = 10 Hz, when duty cycle ≥ 98 %

VBW ≥ 1/T, when duty cycle < 98 %

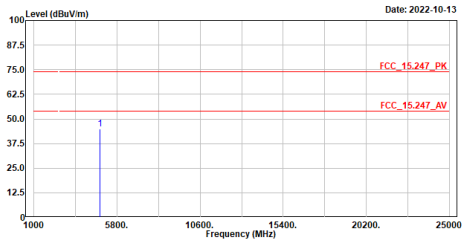
(T refers to the minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation.)

2.4 GHz band	Duty Cycle (%)	T (ms)	1/T (Hz)	VBW (Hz)
802.11b	100.00	1.0000	1000	10
802.11g	95.53	1.3900	719	1000
802.11ax-20 MHz	94.47	1.0250	976	1000
802.11ax-40 MHz	90.43	0.5480	1825	2000

Note: Duty Cycle Refer to Section 9.

4.4. Test Result of Radiated Emission

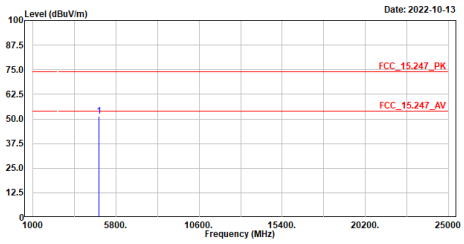
Site :HY-CB03
Condition :3m ,HORIZONTAL
Mode :TX_b_2412MHz
Test BY :Ashton Chiu



No.	Frequency MHz	Level dBuV/m	Limit Line dBuV/m	Over Limit dB	Read Level dBuV	Factor dB	Remark
1	4824.000	44.86	74.00	-29.14	59.37	-14.51	Peak

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

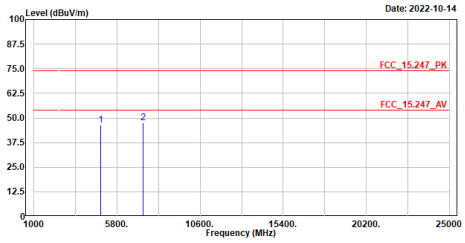
Site :HY-CB03
Condition :3m ,VERTICAL
Mode :TX_b_2412MHz
Test BY :Ashton Chiu



No.	Frequency MHz	Level dBuV/m	Limit Line dBuV/m	Over Limit dB	Read Level dBuV	Factor dB	Remark
1	4824.000	51.49	74.00	-22.51	66.00	-14.51	Peak

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

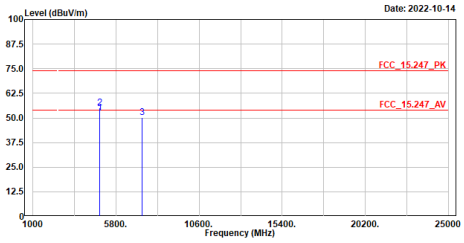
Site :HY-CB03
Condition :3m ,HORIZONTAL
Mode :TX_b_2437MHz
Test BY :Ashton Chiu



No.	Frequency MHz	Level dBuV/m	Limit Line dBuV/m	Over Limit dB	Read Level dBuV	Factor dB	Remark
1	4874.000	46.58	74.00	-27.42	60.94	-14.36	Peak
2	7311.000	47.48	74.00	-26.52	54.42	-6.94	Peak

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

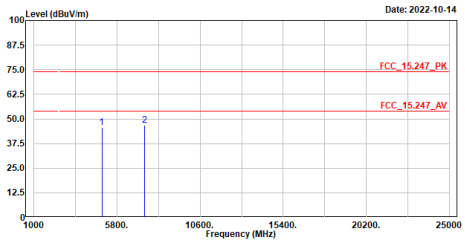
Site :HY-CB03
Condition :3m ,VERTICAL
Mode :TX_b_2437MHz
Test BY :Ashton Chiu



No.	Frequency MHz	Level dBuV/m	Limit Line dBuV/m	Over Limit dB	Read Level dBuV	Factor dB	Remark
1	4874.000	52.59	54.00	-1.41	66.95	-14.36	Average
2	4874.000	54.93	74.00	-19.07	69.29	-14.36	Peak
3	7311.000	50.31	74.00	-23.69	57.25	-6.94	Peak

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

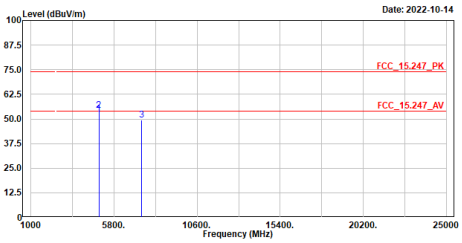
Site :HY-CB03
Condition :3m ,HORIZONTAL
Mode :TX_b_2462MHz
Test BY :Ashton Chiu



No.	Frequency MHz	Level dBuV/m	Limit Line dBuV/m	Over Limit dB	Read Level dBuV	Factor dB	Remark
1	4924.000	45.72	74.00	-28.28	59.87	-14.15	Peak
2	7386.000	46.71	74.00	-27.29	53.63	-6.92	Peak

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

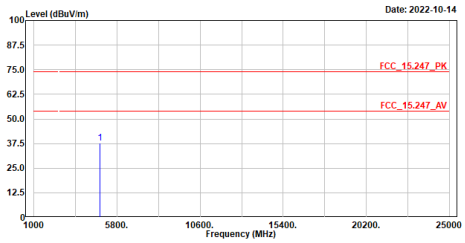
Site :HY-CB03
Condition :3m ,VERTICAL
Mode :TX_b_2462MHz
Test BY :Ashton Chiu



No.	Frequency MHz	Level dBuV/m	Limit Line dBuV/m	Over Limit dB	Read Level dBuV	Factor dB	Remark
1	4924.000	52.27	54.00	-1.73	66.42	-14.15	Average
2	4924.000	54.18	74.00	-19.82	68.33	-14.15	Peak
3	7386.000	49.39	74.00	-24.61	56.31	-6.92	Peak

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

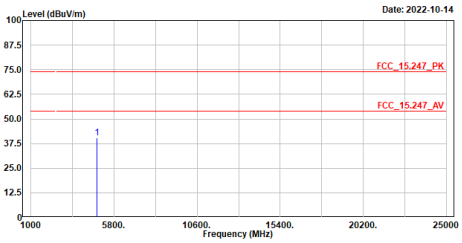
Site :HY-CB03
Condition :3m ,HORIZONTAL
Mode :TX_g_2412MHz
Test BY :Jing Chang



No.	Frequency MHz	Level dBuV/m	Limit Line dBuV/m	Over Limit dB	Read Level dBuV	Factor dB	Remark
1	4824.000	37.71	74.00	-36.29	52.22	-14.51	Peak

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

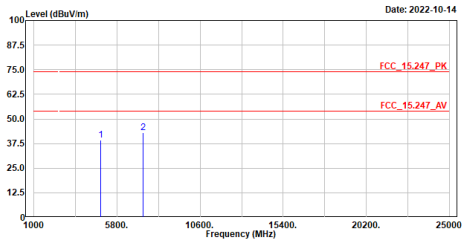
Site :HY-CB03
Condition :3m ,VERTICAL
Mode :TX_g_2412MHz
Test BY :Jing Chang



No.	Frequency MHz	Level dBuV/m	Limit Line dBuV/m	Over Limit dB	Read Level dBuV	Factor dB	Remark
1	4824.000	40.53	74.00	-33.47	55.04	-14.51	Peak

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

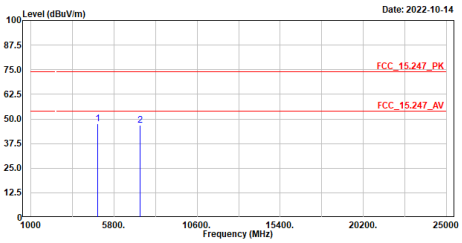
Site :HY-CB03
Condition :3m ,HORIZONTAL
Mode :TX_g_2437MHz
Test BY :Jing Chang



No.	Frequency MHz	Level dBuV/m	Limit Line dBuV/m	Over Limit dB	Read Level dBuV	Factor dB	Remark
1	4874.000	39.34	74.00	-34.66	53.70	-14.36	Peak
2	7311.000	43.05	74.00	-30.95	49.99	-6.94	Peak

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

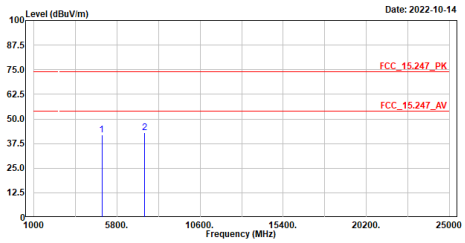
Site :HY-CB03
Condition :3m ,VERTICAL
Mode :TX_g_2437MHz
Test BY :Jing Chang



No.	Frequency MHz	Level dBuV/m	Limit Line dBuV/m	Over Limit dB	Read Level dBuV	Factor dB	Remark
1	4874.000	47.45	74.00	-26.55	61.81	-14.36	Peak
2	7311.000	46.86	74.00	-27.14	53.80	-6.94	Peak

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

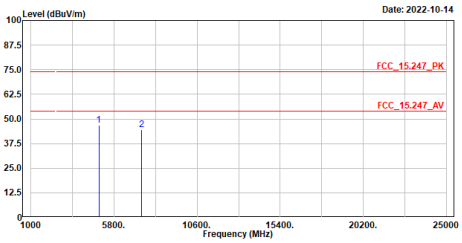
Site :HY-CB03
Condition :3m ,HORIZONTAL
Mode :TX_g_2462MHz
Test BY :Ashton Chiu



No.	Frequency MHz	Level dBuV/m	Limit Line dBuV/m	Over Limit dB	Read Level dBuV	Factor dB	Remark
1	4924.000	41.94	74.00	-32.06	56.09	-14.15	Peak
2	7386.000	43.07	74.00	-30.93	49.99	-6.92	Peak

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

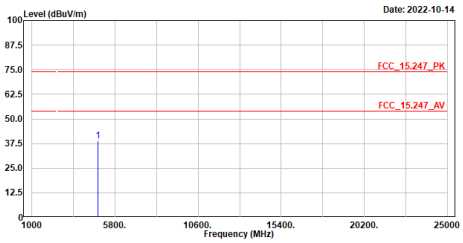
Site :HY-CB03
Condition :3m ,VERTICAL
Mode :TX_g_2462MHz
Test BY :Ashton Chiu



No.	Frequency MHz	Level dBuV/m	Limit Line dBuV/m	Over Limit dB	Read Level dBuV	Factor dB	Remark
1	4924.000	46.77	74.00	-27.23	60.92	-14.15	Peak
2	7386.000	44.57	74.00	-29.43	51.49	-6.92	Peak

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

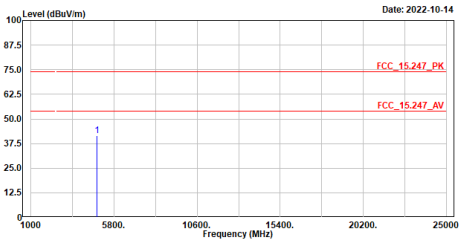
Site :HY-CB03
Condition :3m ,HORIZONTAL
Mode :TX_ax20_2412MHz
Test BY :Ashton Chiu



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	4824.000	38.85	74.00	-35.15	53.36	-14.51	Peak

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

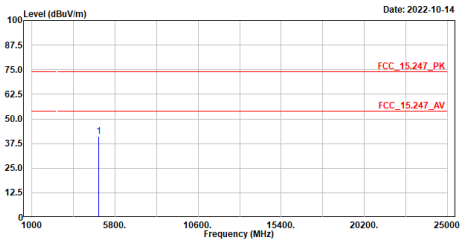
Site :HY-CB03
Condition :3m ,VERTICAL
Mode :TX_ax20_2412MHz
Test BY :Ashton Chiu



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	4824.000	41.36	74.00	-32.64	55.87	-14.51	Peak

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

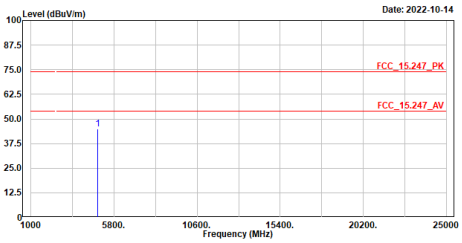
Site :HY-CB03
Condition :3m ,HORIZONTAL
Mode :TX_ax20_2437MHz
Test BY :Jing Chang



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	4874.000	41.21	74.00	-32.79	55.57	-14.36	Peak

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

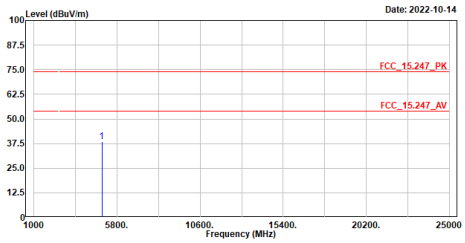
Site :HY-CB03
Condition :3m ,VERTICAL
Mode :TX_ax20_2437MHz
Test BY :Jing Chang



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	4874.000	45.01	74.00	-28.99	59.37	-14.36	Peak

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

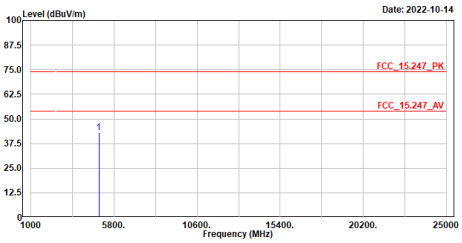
Site :HY-CB03
Condition :3m ,HORIZONTAL
Mode :TX_ax20_2462MHz
Test BY :Jing Chang



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	4924.000	38.37	74.00	-35.63	52.52	-14.15	Peak

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

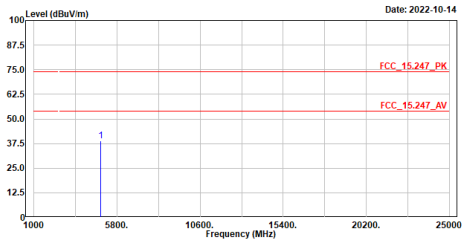
Site :HY-CB03
Condition :3m ,VERTICAL
Mode :TX_ax20_2462MHz
Test BY :Jing Chang



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	4924.000	42.84	74.00	-31.16	56.99	-14.15	Peak

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

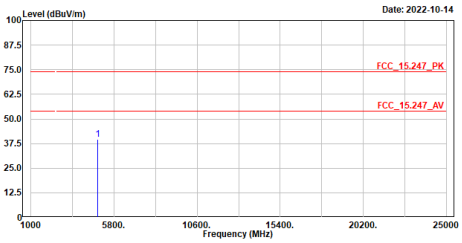
Site :HY-CB03
Condition :3m ,HORIZONTAL
Mode :TX_ax40_2422MHz
Test BY :Ashton Chiu



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	4844.000	38.74	74.00	-35.26	53.19	-14.45	Peak

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

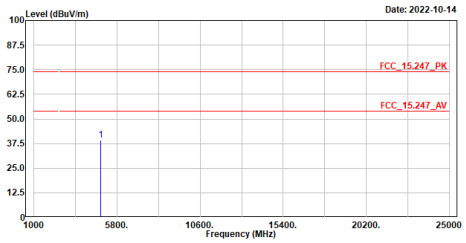
Site :HY-CB03
Condition :3m ,VERTICAL
Mode :TX_ax40_2422MHz
Test BY :Ashton Chiu



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	4844.000	39.63	74.00	-34.37	54.08	-14.45	Peak

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

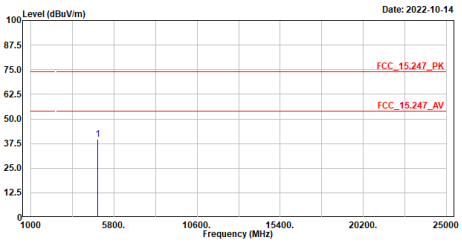
Site :HY-CB03
Condition :3m ,HORIZONTAL
Mode :TX_ax40_2437MHz
Test BY :Jing Chang



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	4874.000	39.41	74.00	-34.59	53.77	-14.36	Peak

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

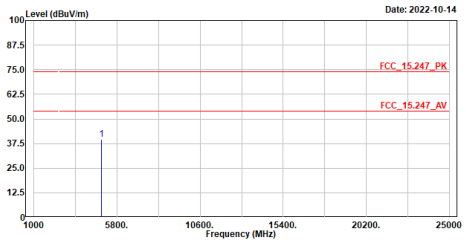
Site :HY-CB03
Condition :3m ,VERTICAL
Mode :TX_ax40_2437MHz
Test BY :Jing Chang



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	4874.000	39.48	74.00	-34.52	53.84	-14.36	Peak

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

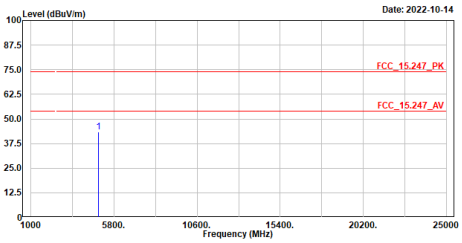
Site :HY-CB03
Condition :3m ,HORIZONTAL
Mode :TX_ax40_2452MHz
Test BY :Jing Chang



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	4904.000	39.46	74.00	-34.54	53.72	-14.26	Peak

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

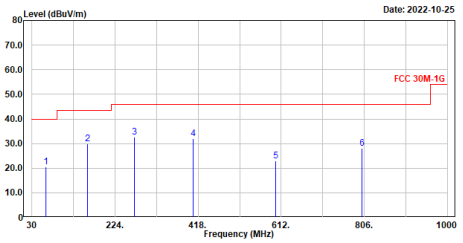
Site :HY-CB03
Condition :3m ,VERTICAL
Mode :TX_ax40_2452MHz
Test BY :Jing Chang



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	4904.000	43.55	74.00	-30.45	57.81	-14.26	Peak

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

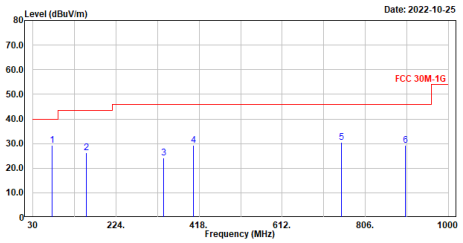
Site :HY-CB03
Condition :3m ,Horizontal
Mode :TX_ax40_2437MHz
Test BY :Ashton Chiu



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	62.980	20.49	40.00	-19.51	45.89	-25.40	QP
2	159.980	29.74	43.50	-13.76	53.92	-24.18	QP
3	268.620	32.68	46.00	-13.32	57.65	-24.97	QP
4	406.360	32.08	46.00	-13.92	53.17	-21.09	QP
5	599.390	23.00	46.00	-23.00	39.29	-16.29	QP
6	800.180	28.11	46.00	-17.89	41.77	-13.66	QP

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission under 30MHz was not included since the emission levels are very low against the limit.

Site :HY-CB03
Condition :3m ,Vertical
Mode :TX_ax40_2437MHz
Test BY :Ashton Chiu



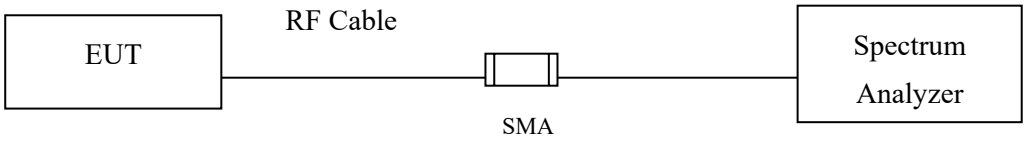
No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	74.620	29.20	40.00	-10.80	56.90	-27.70	QP
2	154.160	26.40	43.50	-17.10	50.81	-24.41	QP
3	335.550	24.23	46.00	-21.77	46.92	-22.69	QP
4	404.420	29.43	46.00	-16.57	50.53	-21.10	QP
5	750.710	30.55	46.00	-15.45	44.68	-14.13	QP
6	900.090	29.15	46.00	-16.85	41.65	-12.50	QP

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission under 30MHz was not included since the emission levels are very low against the limit.

5. RF Antenna Conducted Test

5.1. Test Setup

RF antenna Conducted Measurement:



5.2. Limits

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement. Attenuation below the general limits specified in Section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a) (see Section 15.205(c)).

5.3. Test Procedure

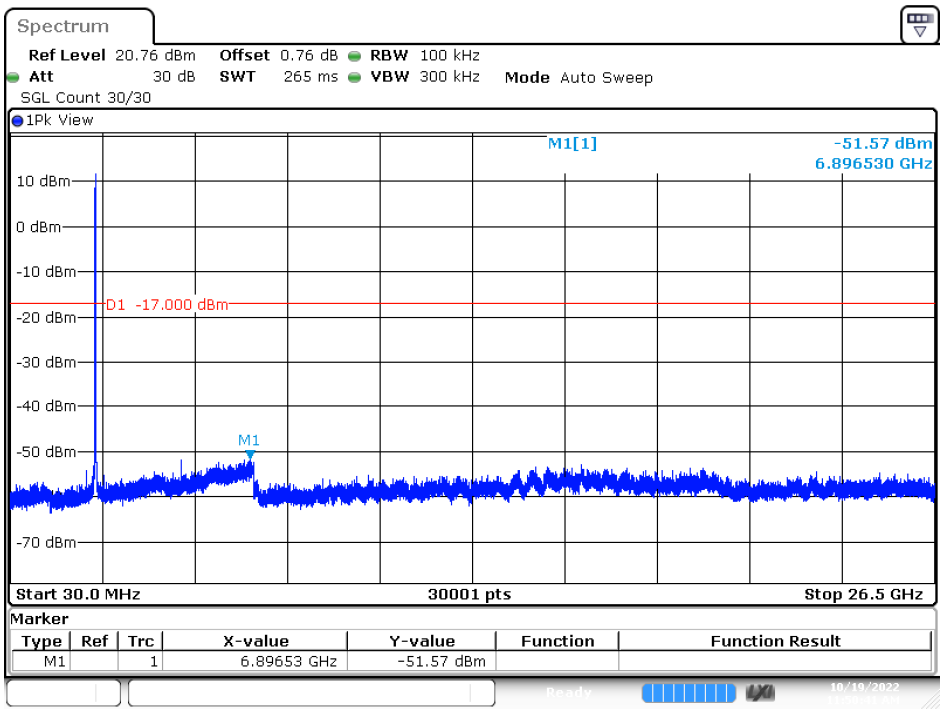
The EUT was tested according to C63.10:2013 Section 11.11 for compliance to FCC 47CFR 15.247 requirements.

Set RBW = 100 kHz, Set VBW> RBW, scan up through 10th harmonic.

5.4. Test Result of RF antenna conducted test

Product	:	WiFi 6 ax1800 2x2 dual concurrent M.2 B key Module
Test Item	:	RF antenna conducted test
Test Mode	:	Transmit (802.11b)-CDD
Test Date	:	2022/10/19

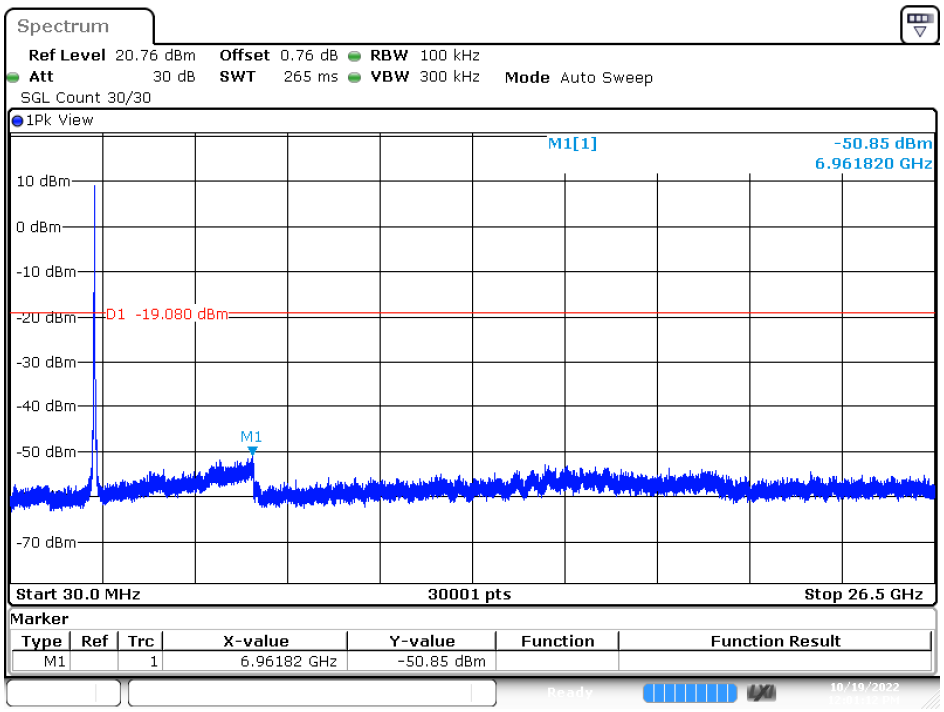
Channel 11 (2462 MHz)



Date: 19.OCT.2022 11:50:41

Product	:	WiFi 6 ax1800 2x2 dual concurrent M.2 B key Module
Test Item	:	RF Antenna Conducted Spurious
Test Mode	:	Transmit (802.11g)-CDD
Test Date	:	2022/10/19

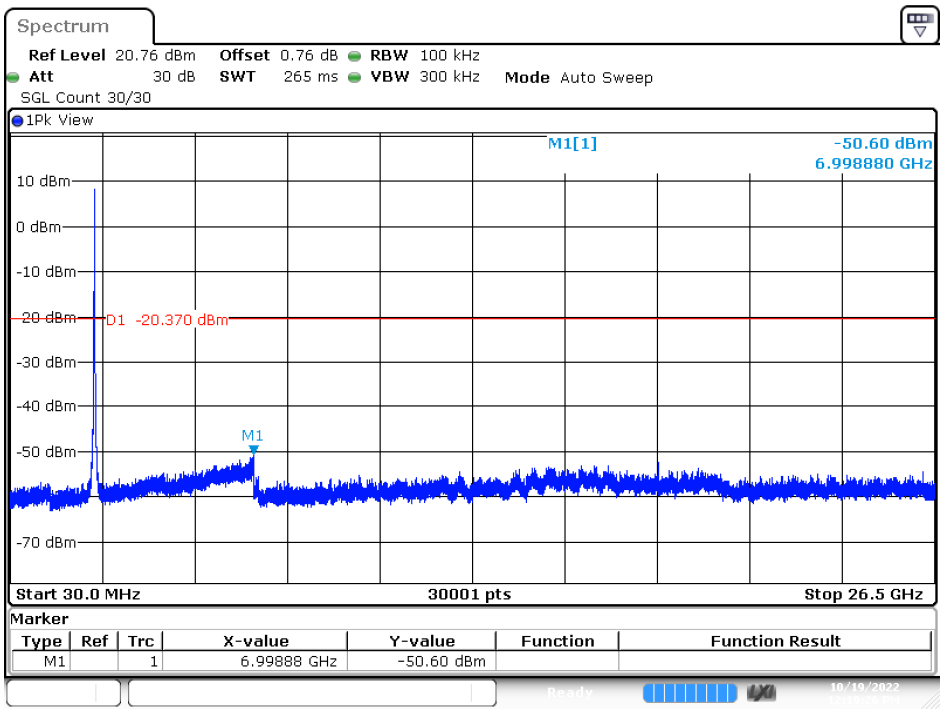
Channel 06 (2437 MHz)



Date: 19.OCT.2022 12:01:12

Product	:	WiFi 6 ax1800 2x2 dual concurrent M.2 B key Module
Test Item	:	RF Antenna Conducted Spurious
Test Mode	:	Transmit (802.11ax-20 MHz)-CDD
Test Date	:	2022/10/19

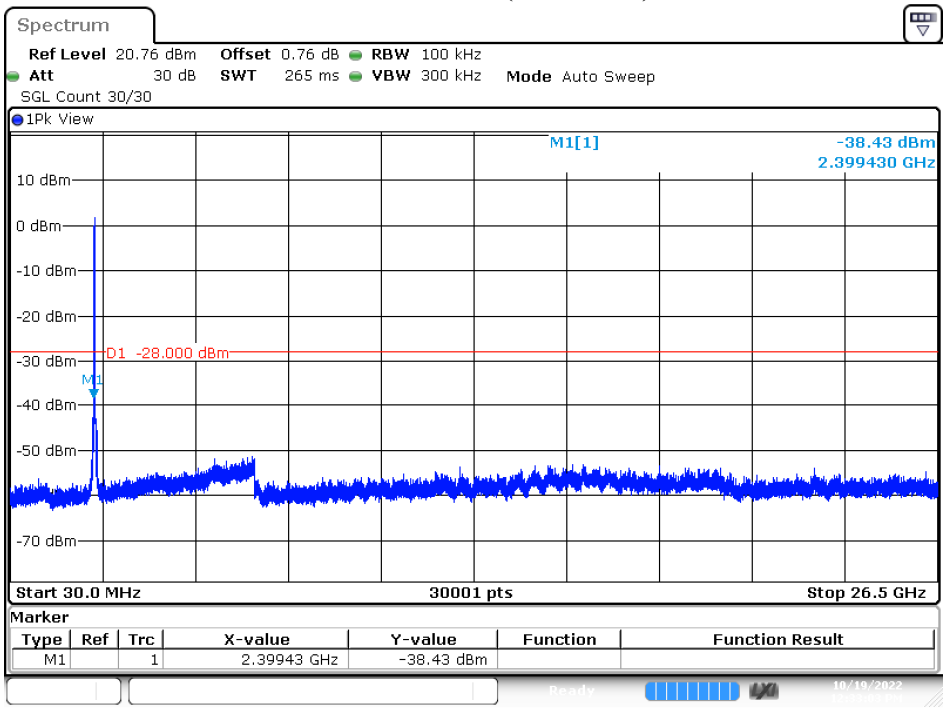
Channel 06 (2437 MHz)



Date: 19.OCT.2022 12:19:26

Product	:	WiFi 6 ax1800 2x2 dual concurrent M.2 B key Module
Test Item	:	RF Antenna Conducted Spurious
Test Mode	:	Transmit (802.11ax-40 MHz)-CDD
Test Date	:	2022/10/19

Channel 06 (2437 MHz)

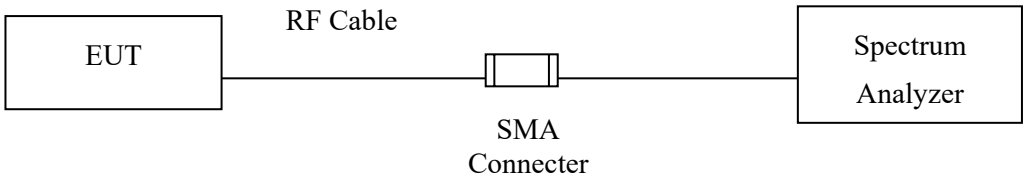


Date: 19.OCT.2022 12:33:03

6. Band Edge

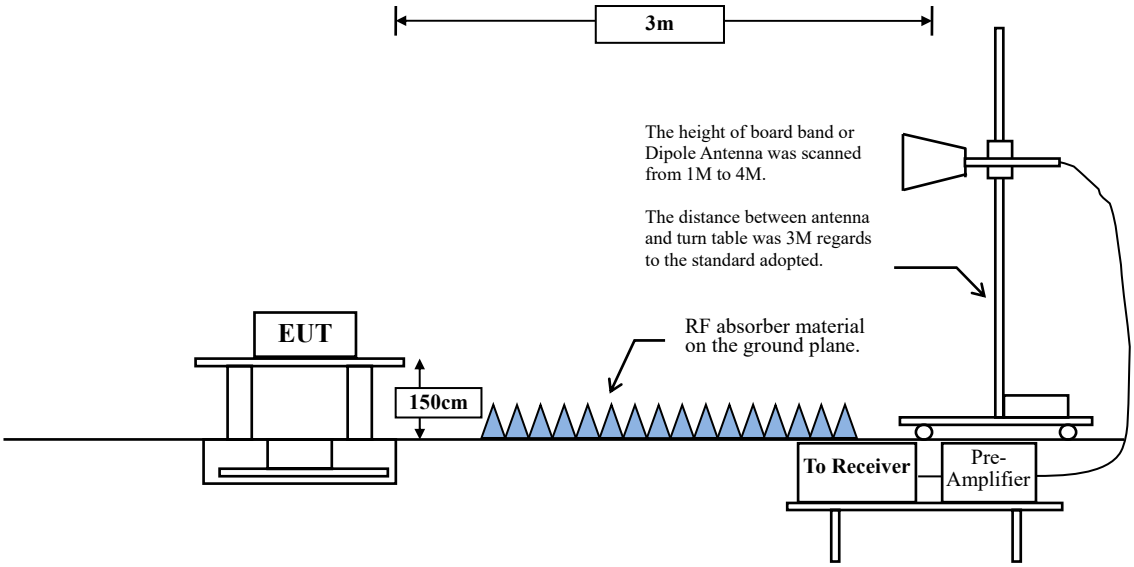
6.1. Test Setup

RF Conducted Measurement



RF Radiated Measurement:

Above 1 GHz



6.2. Limits

According to FCC Section 15.247(d). In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in Section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a) (see Section 15.205(c)).

6.3. Test Procedure

The EUT was setup according to ANSI C63.10, 2013 and tested according to C63.10:2013 Section 11.12.1 for compliance to FCC 47CFR 15.247 requirements.
The EUT is placed on a turn table which is 1.5 meter above ground. The turn table is rotated 360 degrees to determine the position of the maximum emission level. The EUT was positioned such that the distance from antenna to the EUT was 3 meters.
The antenna is scanned from 1 meter to 4 meters to find out the maximum emission level. This is repeated for both horizontal and vertical polarization of the antenna. In order to find the maximum emission, all of the interface cables were manipulated according to ANSI C63.10:2013 on radiated measurement.

RBW and VBW Parameter setting:

According to C63.10 Section 11.12.2.4 Peak measurement procedure.

RBW = as specified in Table 1.

VBW ≥ 3 x RBW.

Table 1 - RBW as a function of frequency

Frequency	RBW
9-150 kHz	200-300 Hz
0.15-30 MHz	9-10 kHz
30-1000 MHz	100-120 kHz
> 1000 MHz	1 MHz

According to C63.10 Section 11.12.2.5 Average measurement procedure.

RBW = 1 MHz.

VBW = 10 Hz, when duty cycle ≥ 98 %

VBW ≥ 1/T, when duty cycle < 98 %

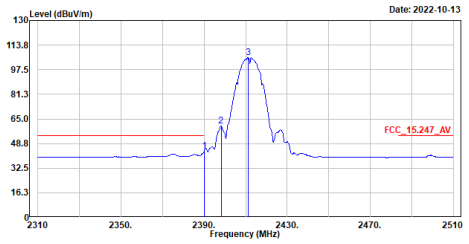
(T refers to the minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation.)

2.4 GHz band	Duty Cycle (%)	T (ms)	1/T (Hz)	VBW (Hz)
802.11b	100.00	1.0000	1000	10
802.11g	95.53	1.3900	719	1000
802.11ax-20 MHz	94.47	1.0250	976	1000
802.11ax-40 MHz	90.43	0.5480	1825	2000

Note: Duty Cycle Refer to Section 9.

6.4. Test Result of Band Edge

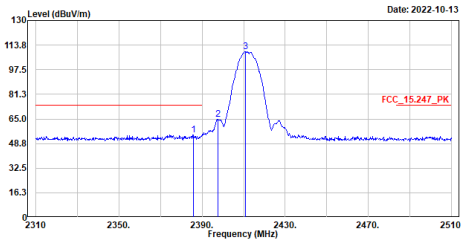
Site :HY-CB03
Condition :3m ,Horizontal
Mode :TX_b_2412MHz
Test BY :Ashton Chiu



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	2390.000	43.68	54.00	-10.32	37.14	6.54	Average
2	2398.200	60.47	------	------	53.94	6.53	Average
3	2411.200	105.70	------	------	99.18	6.52	Average

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

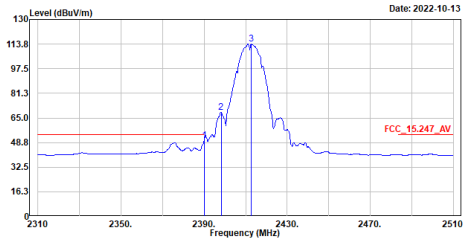
Site :HY-CB03
Condition :3m ,Horizontal
Mode :TX_b_2412MHz
Test BY :Ashton Chiu



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	2385.800	54.41	74.00	-19.59	47.86	6.55	Peak
2	2397.600	64.74	------	------	58.22	6.52	Peak
3	2410.800	109.42	------	------	102.90	6.52	Peak

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

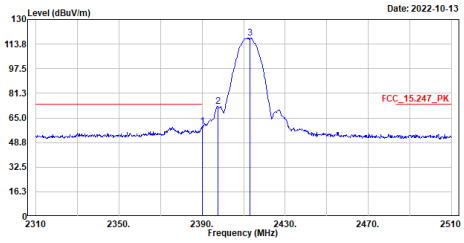
Site :HY-CB03
Condition :3m ,VERTICAL
Mode :TX_b_2412MHz
Test BY :Ashton Chiu



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	2390.000	50.25	54.00	-3.75	43.71	6.54	Average
2	2398.200	68.71	------	------	62.18	6.53	Average
3	2412.800	113.86	------	------	107.35	6.51	Average

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

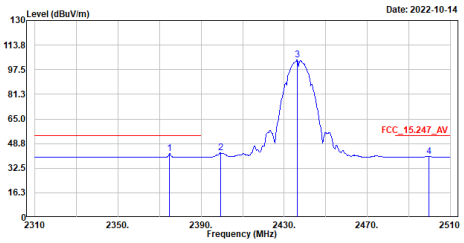
Site :HY-CB03
Condition :3m ,VERTICAL
Mode :TX_b_2412MHz
Test BY :Ashton Chiu



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	2390.000	59.24	74.00	-14.76	52.70	6.54	Peak
2	2397.600	72.65	------	------	66.13	6.52	Peak
3	2413.200	117.77	------	------	111.26	6.51	Peak

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

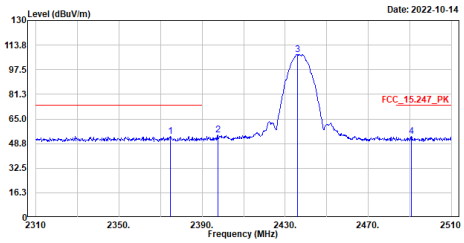
Site :HY-CB03
Condition :3m ,Horizontal
Mode :TX_b_2437MHz
Test BY :Ashton Chiu



No.	Frequency MHz	Level dBuV/m	Limit Line dBuV/m	Over Limit dB	Read Level dBuV	Factor dB	Remark
1	2374.800	41.97	54.00	-12.03	35.42	6.55	Average
2	2399.400	42.50	------	------	35.97	6.53	Average
3	2436.200	103.92	------	------	97.42	6.50	Average
4	2499.600	40.35	54.00	-13.65	33.79	6.56	Average

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

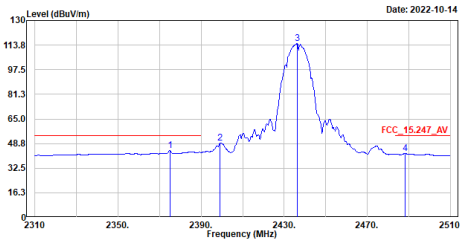
Site :HY-CB03
Condition :3m ,Horizontal
Mode :TX_b_2437MHz
Test BY :Ashton Chiu



No.	Frequency MHz	Level dBuV/m	Limit Line dBuV/m	Over Limit dB	Read Level dBuV	Factor dB	Remark
1	2374.600	53.71	74.00	-20.29	47.16	6.55	Peak
2	2397.600	54.37	------	------	47.85	6.52	Peak
3	2435.800	107.60	------	------	101.10	6.50	Peak
4	2490.800	53.45	74.00	-20.55	46.90	6.55	Peak

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

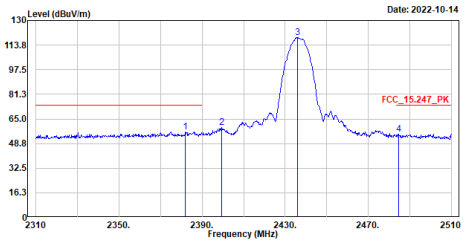
Site :HY-CB03
Condition :3m ,Vertical
Mode :TX_b_2437MHz
Test BY :Ashton Chiu



No.	Frequency MHz	Level dBuV/m	Limit Line dBuV/m	Over Limit dB	Read Level dBuV	Factor dB	Remark
1	2375.000	44.25	54.00	-9.75	37.70	6.55	Average
2	2399.200	49.21	------	------	42.68	6.53	Average
3	2436.200	114.94	------	------	108.44	6.50	Average
4	2488.200	42.03	54.00	-11.97	35.49	6.54	Average

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

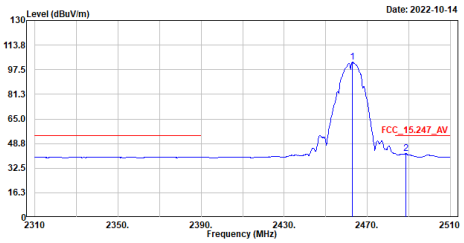
Site :HY-CB03
Condition :3m ,Vertical
Mode :TX_b_2437MHz
Test BY :Ashton Chiu



No.	Frequency MHz	Level dBuV/m	Limit Line dBuV/m	Over Limit dB	Read Level dBuV	Factor dB	Remark
1	2382.000	56.58	74.00	-17.42	50.03	6.55	Peak
2	2399.600	59.48	------	------	52.95	6.53	Peak
3	2435.800	118.88	------	------	112.38	6.50	Peak
4	2484.600	54.80	74.00	-19.20	48.26	6.54	Peak

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

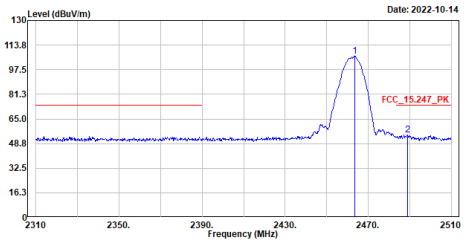
Site :HY-CB03
Condition :3m ,Horizontal
Mode :TX_b_2462MHz
Test BY :Ashton Chiu



No.	Frequency MHz	Level dBuV/m	Limit Line dBuV/m	Over Limit dB	Read Level dBuV	Factor dB	Remark
1	2462.800	102.45	------	------	95.94	6.51	Average
2	2488.600	42.04	54.00	-11.96	35.50	6.54	Average

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

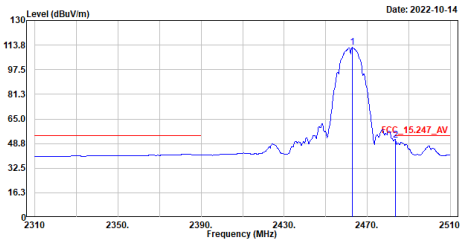
Site :HY-CB03
Condition :3m ,Horizontal
Mode :TX_b_2462MHz
Test BY :Ashton Chiu



No.	Frequency MHz	Level dBuV/m	Limit Line dBuV/m	Over Limit dB	Read Level dBuV	Factor dB	Remark
1	2463.400	106.42	------	------	99.91	6.51	Peak
2	2488.800	54.33	74.00	-19.67	47.79	6.54	Peak

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

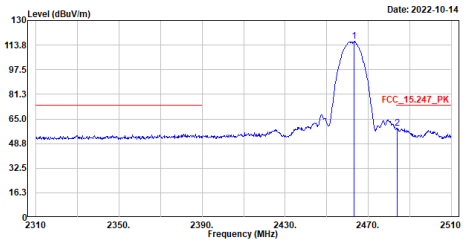
Site :HY-CB03
Condition :3m ,Vertical
Mode :TX_b_2462MHz
Test BY :Ashton Chiu



No.	Frequency MHz	Level dBuV/m	Limit Line dBuV/m	Over Limit dB	Read Level dBuV	Factor dB	Remark
1	2462.800	112.23	------	------	105.72	6.51	Average
2	2483.600	50.99	54.00	-3.01	44.45	6.54	Average

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

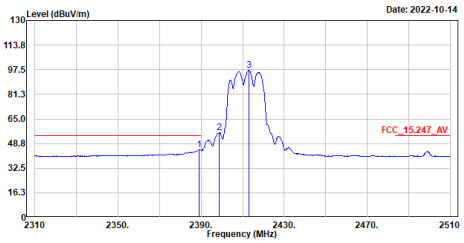
Site :HY-CB03
Condition :3m ,Vertical
Mode :TX_b_2462MHz
Test BY :Ashton Chiu



No.	Frequency MHz	Level dBuV/m	Limit Line dBuV/m	Over Limit dB	Read Level dBuV	Factor dB	Remark
1	2463.200	116.12	------	------	109.61	6.51	Peak
2	2483.800	59.11	74.00	-14.89	52.57	6.54	Peak

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

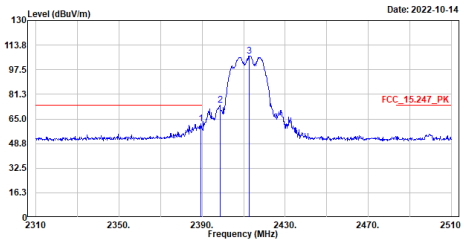
Site :HY-CB03
Condition :3m ,Horizontal
Mode :TX_g_2412MHz
Test BY :Jing Chang



No.	Frequency MHz	Level dBuV/m	Limit Line dBuV/m	Over Limit dB	Read Level dBuV	Factor dB	Remark
1	2389.200	44.68	54.00	-9.32	38.14	6.54	Average
2	2398.800	55.93	------	------	49.40	6.53	Average
3	2413.000	97.21	------	------	90.70	6.51	Average

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

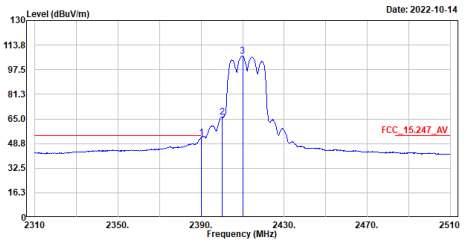
Site :HY-CB03
Condition :3m ,Horizontal
Mode :TX_g_2412MHz
Test BY :Jing Chang



No.	Frequency MHz	Level dBuV/m	Limit Line dBuV/m	Over Limit dB	Read Level dBuV	Factor dB	Remark
1	2389.400	61.71	74.00	-12.29	55.17	6.54	Peak
2	2398.600	74.04	------	------	67.51	6.53	Peak
3	2412.800	106.62	------	------	100.11	6.51	Peak

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

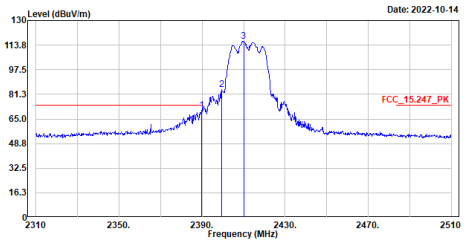
Site :HY-CB03
Condition :3m ,Vertical
Mode :TX_g_2412MHz
Test BY :Jing Chang



No.	Frequency MHz	Level dBuV/m	Limit Line dBuV/m	Over Limit dB	Read Level dBuV	Factor dB	Remark
1	2390.000	52.42	54.00	-1.58	45.88	6.54	Average
2	2400.000	66.29	------	------	59.76	6.53	Average
3	2410.000	106.66	------	------	100.14	6.52	Average

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

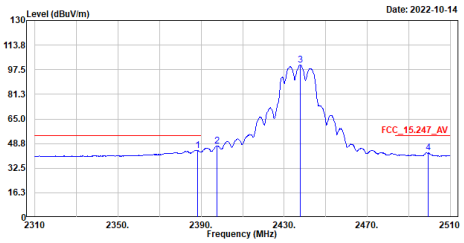
Site :HY-CB03
Condition :3m ,Vertical
Mode :TX_g_2412MHz
Test BY :Jing Chang



No.	Frequency MHz	Level dBuV/m	Limit Line dBuV/m	Over Limit dB	Read Level dBuV	Factor dB	Remark
1	2389.800	70.87	74.00	-3.13	64.33	6.54	Peak
2	2399.600	84.30	------	------	77.77	6.53	Peak
3	2410.000	116.25	------	------	109.73	6.52	Peak

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

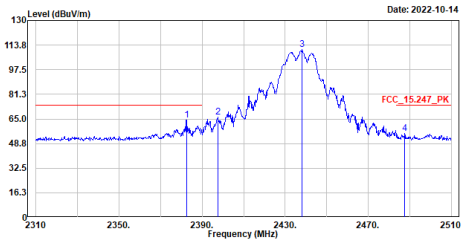
Site :HY-CB03
Condition :3m ,Horizontal
Mode :TX_g_2437MHz
Test BY :Jing Chang



No.	Frequency MHz	Level dBuV/m	Limit Line dBuV/m	Over Limit dB	Read Level dBuV	Factor dB	Remark
1	2388.400	44.35	54.00	-9.65	37.81	6.54	Average
2	2397.600	47.24	------	------	40.72	6.52	Average
3	2437.800	100.75	------	------	94.25	6.50	Average
4	2499.400	42.61	54.00	-11.39	36.05	6.56	Average

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

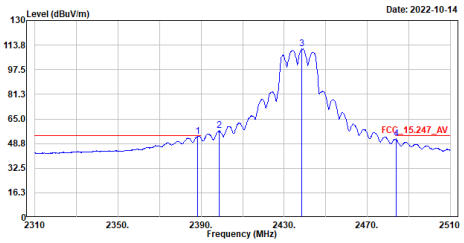
Site :HY-CB03
Condition :3m ,Horizontal
Mode :TX_g_2437MHz
Test BY :Jing Chang



No.	Frequency MHz	Level dBuV/m	Limit Line dBuV/m	Over Limit dB	Read Level dBuV	Factor dB	Remark
1	2382.600	64.34	74.00	-9.66	57.80	6.54	Peak
2	2397.600	65.98	------	------	59.46	6.52	Peak
3	2438.000	110.81	------	------	104.31	6.50	Peak
4	2487.600	55.36	74.00	-18.64	48.82	6.54	Peak

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

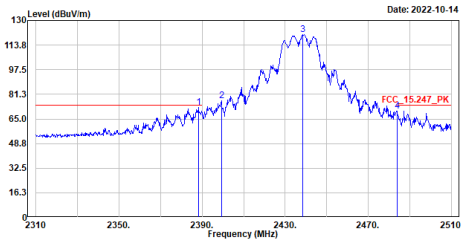
Site :HY-CB03
Condition :3m ,Vertical
Mode :TX_g_2437MHz
Test BY :Jing Chang



No.	Frequency MHz	Level dBuV/m	Limit Line dBuV/m	Over Limit dB	Read Level dBuV	Factor dB	Remark
1	2388.400	53.47	54.00	-0.53	46.93	6.54	Average
2	2398.800	57.21	------	------	50.68	6.53	Average
3	2438.600	111.21	------	------	104.71	6.50	Average
4	2483.800	51.76	54.00	-2.24	45.22	6.54	Average

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

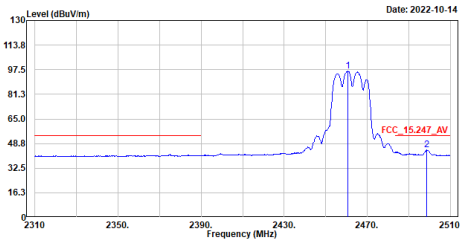
Site :HY-CB03
Condition :3m ,Vertical
Mode :TX_g_2437MHz
Test BY :Jing Chang



No.	Frequency MHz	Level dBuV/m	Limit Line dBuV/m	Over Limit dB	Read Level dBuV	Factor dB	Remark
1	2388.200	72.42	74.00	-1.58	65.88	6.54	Peak
2	2399.400	77.10	------	------	70.57	6.53	Peak
3	2438.600	120.85	------	------	114.35	6.50	Peak
4	2483.800	70.23	74.00	-3.77	63.69	6.54	Peak

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

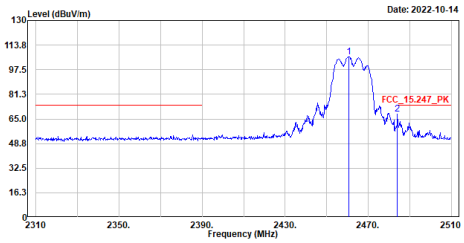
Site :HY-CB03
Condition :3m ,Horizontal
Mode :TX_g_2462MHz
Test BY :Ashton Chiu



No.	Frequency MHz	Level dBuV/m	Limit Line dBuV/m	Over Limit dB	Read Level dBuV	Factor dB	Remark
1	2460.600	96.48	------	------	89.98	6.50	Average
2	2498.600	44.43	54.00	-9.57	37.87	6.56	Average

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

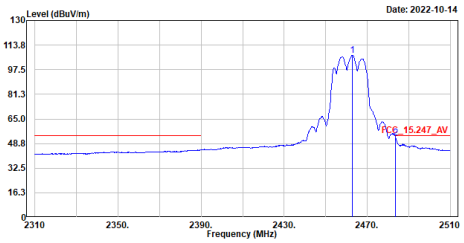
Site :HY-CB03
Condition :3m ,Horizontal
Mode :TX_g_2462MHz
Test BY :Ashton Chiu



No.	Frequency MHz	Level dBuV/m	Limit Line dBuV/m	Over Limit dB	Read Level dBuV	Factor dB	Remark
1	2460.600	106.19	------	------	99.69	6.50	Peak
2	2484.000	68.15	74.00	-5.85	61.61	6.54	Peak

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

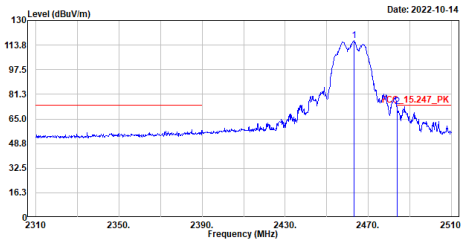
Site :HY-CB03
Condition :3m ,Vertical
Mode :TX_g_2462MHz
Test BY :Ashton Chiu



No.	Frequency MHz	Level dBuV/m	Limit Line dBuV/m	Over Limit dB	Read Level dBuV	Factor dB	Remark
1	2462.800	106.91	------	------	100.40	6.51	Average
2	2483.600	52.71	54.00	-1.29	46.17	6.54	Average

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

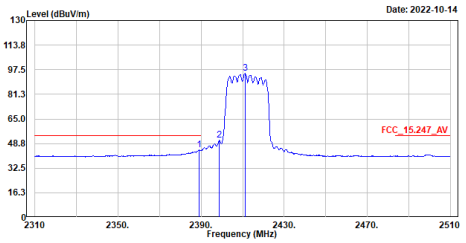
Site :HY-CB03
Condition :3m ,Vertical
Mode :TX_g_2462MHz
Test BY :Ashton Chiu



No.	Frequency MHz	Level dBuV/m	Limit Line dBuV/m	Over Limit dB	Read Level dBuV	Factor dB	Remark
1	2463.200	116.55	------	------	110.04	6.51	Peak
2	2483.800	73.29	74.00	-0.71	66.75	6.54	Peak

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

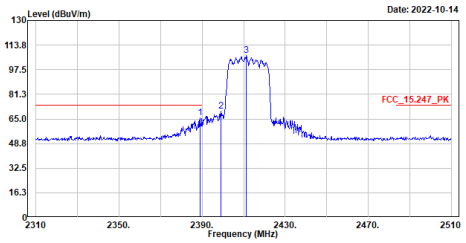
Site :HY-CB03
Condition :3m ,Horizontal
Mode :TX_ax20_2412MHz
Test BY :Ashton Chiu



No.	Frequency MHz	Level dBuV/m	Limit Line dBuV/m	Over Limit dB	Read Level dBuV	Factor dB	Remark
1	2389.200	44.58	54.00	-9.42	38.04	6.54	Average
2	2398.800	50.82	------	------	44.29	6.53	Average
3	2411.200	94.95	------	------	88.43	6.52	Average

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

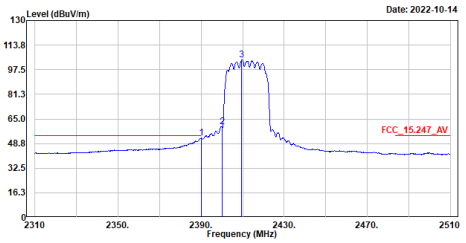
Site :HY-CB03
Condition :3m ,Horizontal
Mode :TX_ax20_2412MHz
Test BY :Ashton Chiu



No.	Frequency MHz	Level dBuV/m	Limit Line dBuV/m	Over Limit dB	Read Level dBuV	Factor dB	Remark
1	2389.000	65.75	74.00	-8.25	59.21	6.54	Peak
2	2399.200	70.28	------	------	63.75	6.53	Peak
3	2411.400	107.19	------	------	100.67	6.52	Peak

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

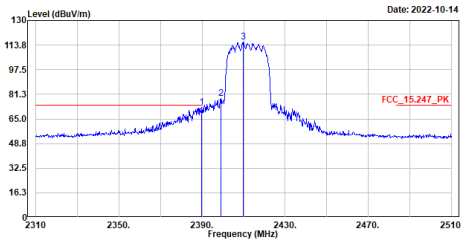
Site :HY-CB03
Condition :3m ,Vertical
Mode :TX_ax20_2412MHz
Test BY :Ashton Chiu



No.	Frequency MHz	Level dBuV/m	Limit Line dBuV/m	Over Limit dB	Read Level dBuV	Factor dB	Remark
1	2390.000	52.42	54.00	-1.58	45.88	6.54	Average
2	2400.000	59.90	------	------	53.37	6.53	Average
3	2409.600	103.84	------	------	97.32	6.52	Average

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

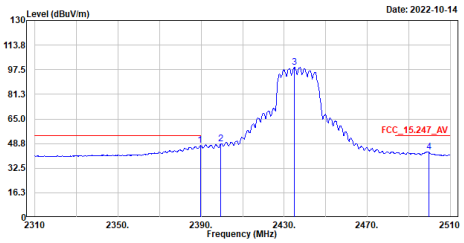
Site :HY-CB03
Condition :3m ,Vertical
Mode :TX_ax20_2412MHz
Test BY :Ashton Chiu



No.	Frequency MHz	Level dBuV/m	Limit Line dBuV/m	Over Limit dB	Read Level dBuV	Factor dB	Remark
1	2389.800	72.60	74.00	-1.40	66.06	6.54	Peak
2	2399.200	78.34	------	------	71.81	6.53	Peak
3	2409.800	115.57	------	------	109.05	6.52	Peak

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

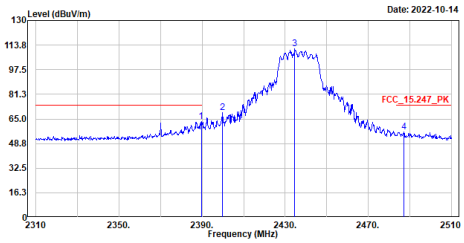
Site :HY-CB03
Condition :3m ,Horizontal
Mode :TX_ax20_2437MHz
Test BY :Jing Chang



No.	Frequency MHz	Level dBuV/m	Limit Line dBuV/m	Over Limit dB	Read Level dBuV	Factor dB	Remark
1	2389.600	47.38	54.00	-6.62	40.84	6.54	Average
2	2399.600	48.66	------	------	42.13	6.53	Average
3	2434.800	99.26	------	------	92.77	6.49	Average
4	2499.800	43.32	54.00	-10.68	36.76	6.56	Average

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

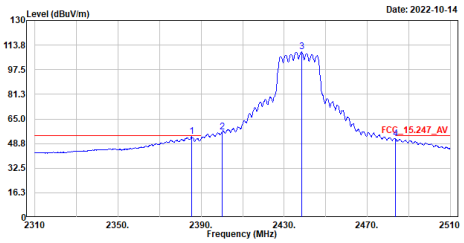
Site :HY-CB03
Condition :3m ,Horizontal
Mode :TX_ax20_2437MHz
Test BY :Jing Chang



No.	Frequency MHz	Level dBuV/m	Limit Line dBuV/m	Over Limit dB	Read Level dBuV	Factor dB	Remark
1	2389.600	63.31	74.00	-10.69	56.77	6.54	Peak
2	2399.800	69.17	------	------	62.64	6.53	Peak
3	2434.600	111.20	------	------	104.71	6.49	Peak
4	2487.000	56.55	74.00	-17.45	50.01	6.54	Peak

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

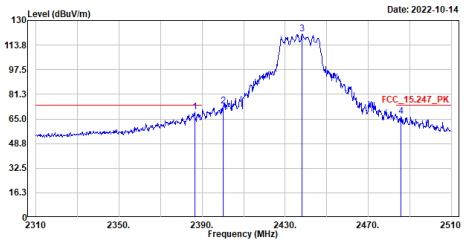
Site :HY-CB03
Condition :3m ,Vertical
Mode :TX_ax20_2437MHz
Test BY :Jing Chang



No.	Frequency MHz	Level dBuV/m	Limit Line dBuV/m	Over Limit dB	Read Level dBuV	Factor dB	Remark
1	2385.600	53.48	54.00	-0.52	46.93	6.55	Average
2	2400.000	56.37	------	------	49.84	6.53	Average
3	2438.400	109.16	------	------	102.66	6.50	Average
4	2483.600	51.82	54.00	-2.18	45.28	6.54	Average

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

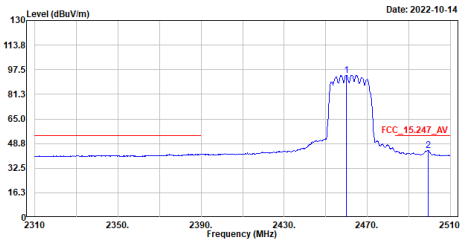
Site :HY-CB03
Condition :3m ,Vertical
Mode :TX_ax20_2437MHz
Test BY :Jing Chang



No.	Frequency MHz	Level dBuV/m	Limit Line dBuV/m	Over Limit dB	Read Level dBuV	Factor dB	Remark
1	2386.400	69.63	74.00	-4.37	63.08	6.55	Peak
2	2400.000	73.43	------	------	66.90	6.53	Peak
3	2438.000	121.19	------	------	114.69	6.50	Peak
4	2485.800	66.69	74.00	-7.31	60.15	6.54	Peak

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

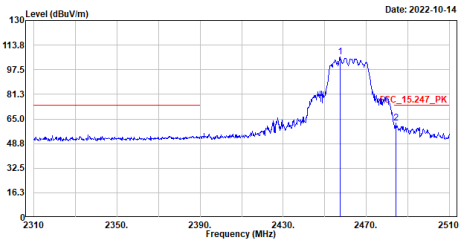
Site :HY-CB03
Condition :3m ,Horizontal
Mode :TX_ax20_2462MHz
Test BY :Jing Chang



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	2459.800	93.87	------	------	87.37	6.50	Average
2	2499.200	44.36	54.00	-9.64	37.80	6.56	Average

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

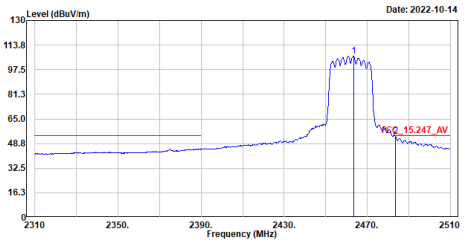
Site :HY-CB03
Condition :3m ,Horizontal
Mode :TX_ax20_2462MHz
Test BY :Jing Chang



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	2457.600	106.00	------	------	99.50	6.50	Peak
2	2484.400	62.31	74.00	-11.69	55.77	6.54	Peak

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

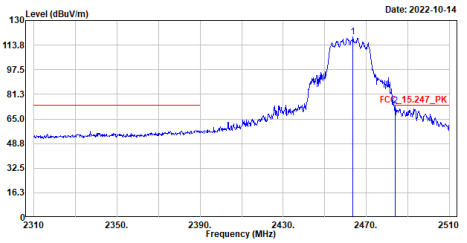
Site :HY-CB03
Condition :3m ,Vertical
Mode :TX_ax20_2462MHz
Test BY :Jing Chang



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	2463.400	106.36	------	------	99.85	6.51	Average
2	2483.600	53.32	54.00	-0.68	46.78	6.54	Average

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

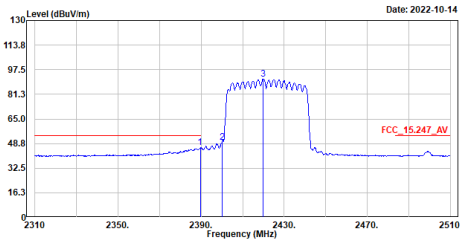
Site :HY-CB03
Condition :3m ,Vertical
Mode :TX_ax20_2462MHz
Test BY :Jing Chang



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	2463.600	119.41	------	------	112.90	6.51	Peak
2	2484.000	73.77	74.00	-0.23	67.23	6.54	Peak

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

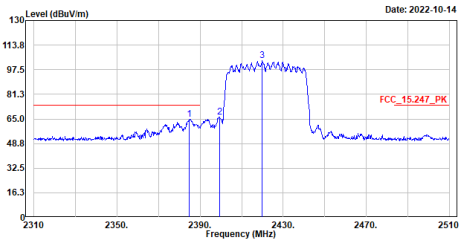
Site :HY-CB03
Condition :3m ,Horizontal
Mode :TX_ax40_2422MHz
Test BY :Ashton Chiu



No.	Frequency MHz	Level dBuV/m	Limit Line dBuV/m	Over Limit dB	Read Level dBuV	Factor dB	Remark
1	2389.600	46.06	54.00	-7.94	39.52	6.54	Average
2	2400.000	49.73	------	------	43.20	6.53	Average
3	2419.800	91.39	------	------	84.87	6.52	Average

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

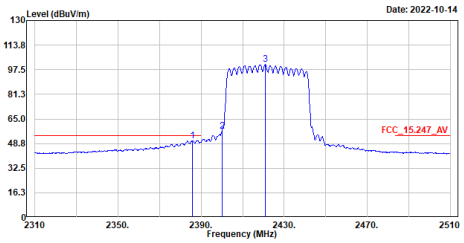
Site :HY-CB03
Condition :3m ,Horizontal
Mode :TX_ax40_2422MHz
Test BY :Ashton Chiu



No.	Frequency MHz	Level dBuV/m	Limit Line dBuV/m	Over Limit dB	Read Level dBuV	Factor dB	Remark
1	2384.600	64.57	74.00	-9.43	58.03	6.54	Peak
2	2399.400	66.47	------	------	59.94	6.53	Peak
3	2420.000	103.38	------	------	96.86	6.52	Peak

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

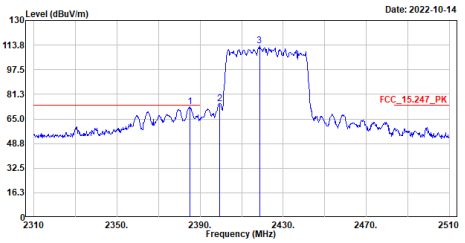
Site :HY-CB03
Condition :3m ,Vertical
Mode :TX_ax40_2422MHz
Test BY :Ashton Chiu



No.	Frequency MHz	Level dBuV/m	Limit Line dBuV/m	Over Limit dB	Read Level dBuV	Factor dB	Remark
1	2385.800	50.61	54.00	-3.39	44.06	6.55	Average
2	2400.000	57.10	------	------	50.57	6.53	Average
3	2420.800	100.82	------	------	94.30	6.52	Average

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

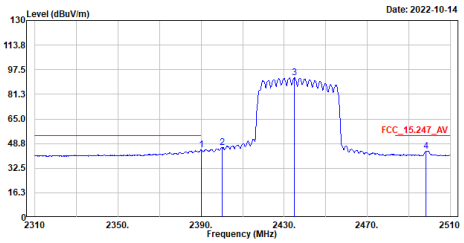
Site :HY-CB03
Condition :3m ,Vertical
Mode :TX_ax40_2422MHz
Test BY :Ashton Chiu



No.	Frequency MHz	Level dBuV/m	Limit Line dBuV/m	Over Limit dB	Read Level dBuV	Factor dB	Remark
1	2385.200	73.15	74.00	-0.85	66.61	6.54	Peak
2	2399.400	75.15	------	------	68.62	6.53	Peak
3	2418.600	113.09	------	------	106.58	6.51	Peak

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

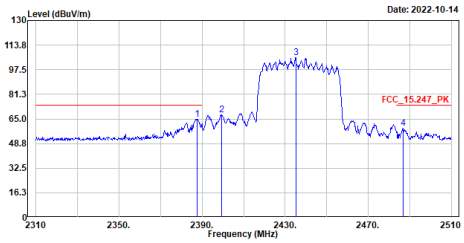
Site :HY-CB03
Condition :3m ,Horizontal
Mode :TX_ax40_2437MHz
Test BY :Jing Chang



No.	Frequency MHz	Level dBuV/m	Limit Line dBuV/m	Over Limit dB	Read Level dBuV	Factor dB	Remark
1	2390.000	44.83	54.00	-9.17	38.29	6.54	Average
2	2400.000	46.02	------	------	39.49	6.53	Average
3	2435.000	92.40	------	------	85.91	6.49	Average
4	2498.400	43.76	54.00	-10.24	37.20	6.56	Average

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

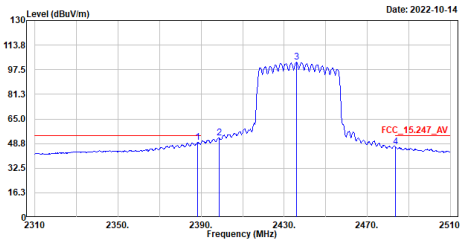
Site :HY-CB03
Condition :3m ,Horizontal
Mode :TX_ax40_2437MHz
Test BY :Jing Chang



No.	Frequency MHz	Level dBuV/m	Limit Line dBuV/m	Over Limit dB	Read Level dBuV	Factor dB	Remark
1	2387.600	64.97	74.00	-9.03	58.43	6.54	Peak
2	2399.400	67.87	------	------	61.34	6.53	Peak
3	2435.200	105.47	------	------	98.97	6.50	Peak
4	2486.800	58.80	74.00	-15.20	52.26	6.54	Peak

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

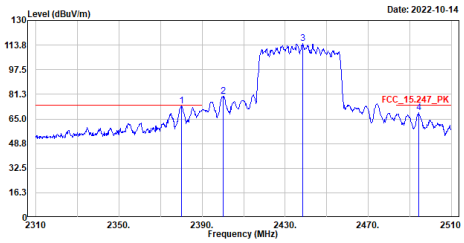
Site :HY-CB03
Condition :3m ,Vertical
Mode :TX_ax40_2437MHz
Test BY :Jing Chang



No.	Frequency MHz	Level dBuV/m	Limit Line dBuV/m	Over Limit dB	Read Level dBuV	Factor dB	Remark
1	2388.400	49.69	54.00	-4.31	43.15	6.54	Average
2	2398.600	52.63	------	------	46.10	6.53	Average
3	2436.000	102.36	------	------	95.86	6.50	Average
4	2483.600	46.46	54.00	-7.54	39.92	6.54	Average

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

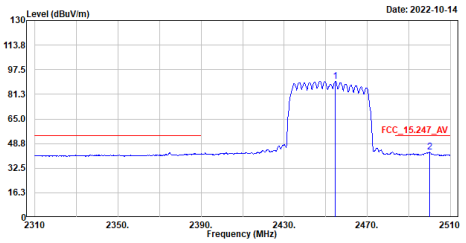
Site :HY-CB03
Condition :3m ,Vertical
Mode :TX_ax40_2437MHz
Test BY :Jing Chang



No.	Frequency MHz	Level dBuV/m	Limit Line dBuV/m	Over Limit dB	Read Level dBuV	Factor dB	Remark
1	2380.000	73.52	74.00	-0.48	66.97	6.55	Peak
2	2400.000	80.08	------	------	73.55	6.53	Peak
3	2438.400	114.55	------	------	108.05	6.50	Peak
4	2494.200	69.15	74.00	-4.85	62.59	6.56	Peak

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

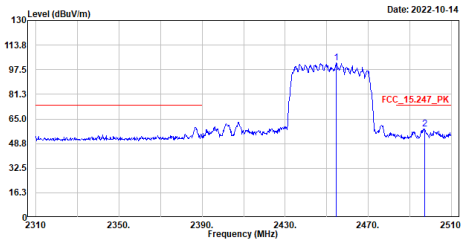
Site :HY-CB03
Condition :3m ,Horizontal
Mode :TX_ax40_2452MHz
Test BY :Jing Chang



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	2454.600	89.79	------	------	83.29	6.50	Average
2	2500.000	43.05	54.00	-10.95	36.49	6.56	Average

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

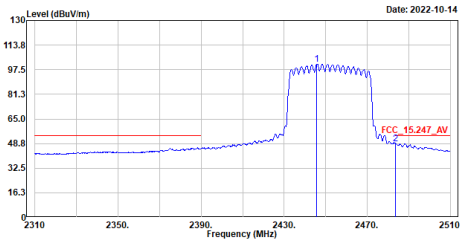
Site :HY-CB03
Condition :3m ,Horizontal
Mode :TX_ax40_2452MHz
Test BY :Jing Chang



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	2454.600	102.06	------	------	95.56	6.50	Peak
2	2497.200	58.61	74.00	-15.39	52.05	6.56	Peak

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

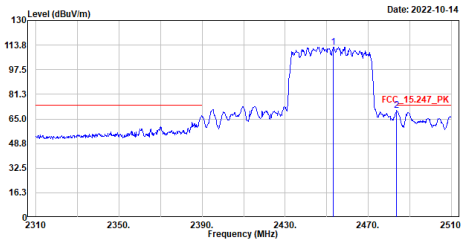
Site :HY-CB03
Condition :3m ,Vertical
Mode :TX_ax40_2452MHz
Test BY :Jing Chang



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	2445.800	101.20	------	------	94.71	6.49	Average
2	2483.600	48.78	54.00	-5.22	42.24	6.54	Average

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

Site :HY-CB03
Condition :3m ,Vertical
Mode :TX_ax40_2452MHz
Test BY :Jing Chang

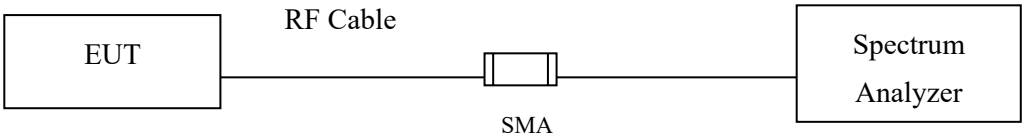


No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	2453.000	112.34	------	------	105.85	6.49	Peak
2	2483.600	70.41	74.00	-3.59	63.87	6.54	Peak

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

7. 6dB Bandwidth

7.1. Test Setup



7.2. Limits

The minimum bandwidth shall be at least 500 kHz.

7.3. Test Procedure

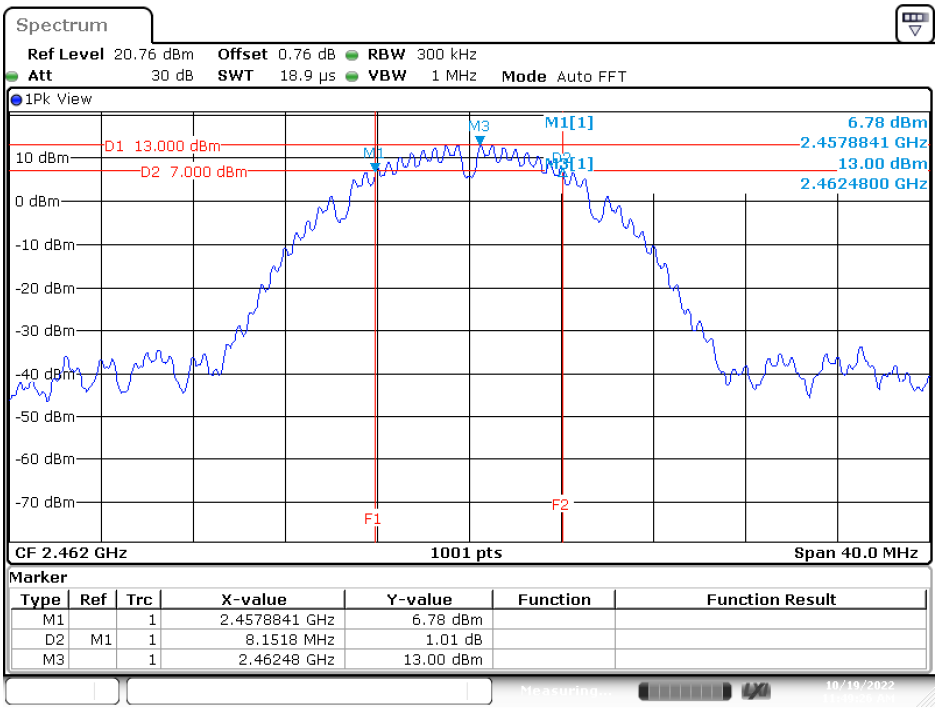
The EUT was setup according to ANSI C63.4, 2014; tested according to ANSI C63.10 Section 11.8 for compliance to FCC 47CFR 15.247 requirements.

7.4. Test Result of 6dB Bandwidth

Product : WiFi 6 ax1800 2x2 dual concurrent M.2 B key Module
Test Item : 6dB Bandwidth Data
Test Mode : Transmit (802.11b)-CDD

Channel No.	Frequency (MHz)	Chain	Measurement Level (kHz)	Required Limit (kHz)	Result
01	2412	A	8591	>500	Pass
06	2437	A	8152	>500	Pass
11	2462	A	8152	>500	Pass
01	2412	B	8152	>500	Pass
06	2437	B	8152	>500	Pass
11	2462	B	8152	>500	Pass

Figure Channel 11:

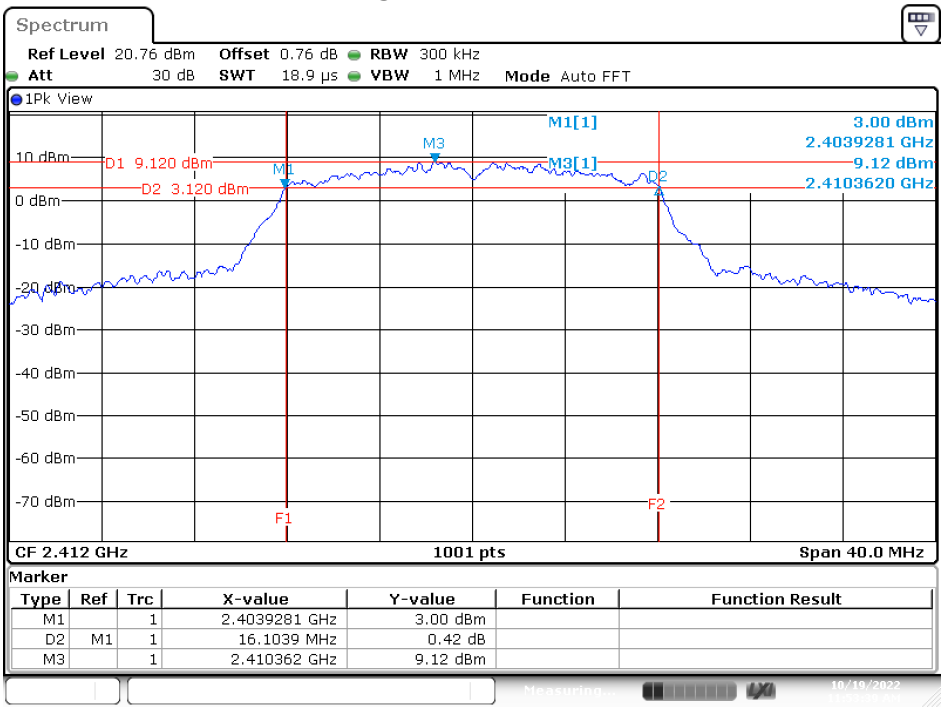


Date: 19.OCT.2022 11:49:26

Product : WiFi 6 ax1800 2x2 dual concurrent M.2 B key Module
Test Item : 6dB Bandwidth Data
Test Mode : Transmit (802.11g)-CDD

Channel No.	Frequency (MHz)	Chain	Measurement Level (kHz)	Required Limit (kHz)	Result
01	2412	A	16104	>500	Pass
06	2437	A	16224	>500	Pass
11	2462	A	16024	>500	Pass
01	2412	B	16304	>500	Pass
06	2437	B	16304	>500	Pass
11	2462	B	16184	>500	Pass

Figure Channel 01:

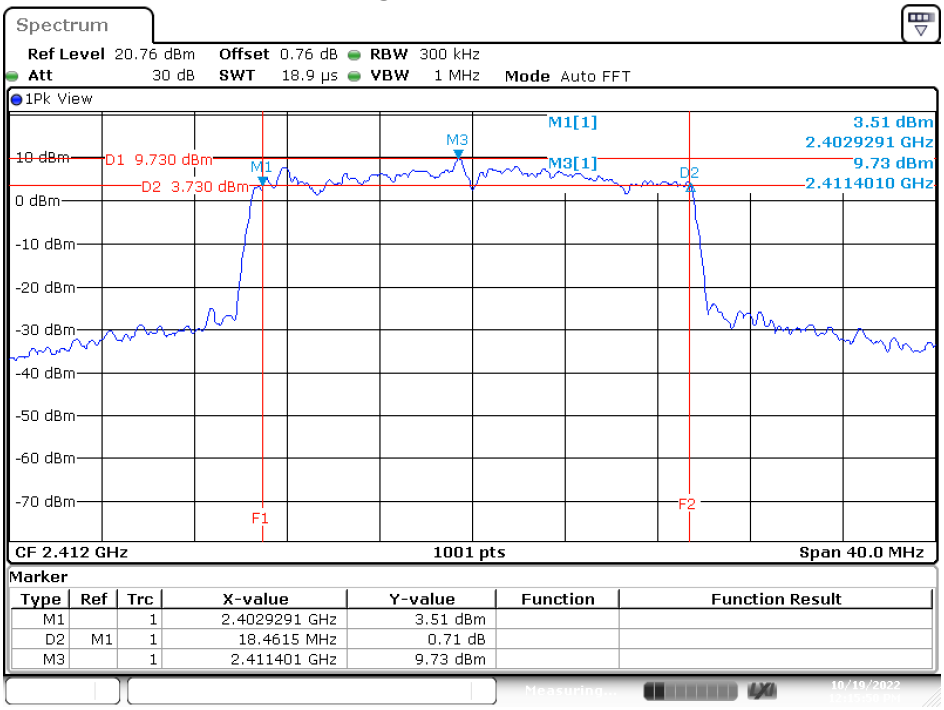


Date: 19.OCT.2022 11:53:38

Product : WiFi 6 ax1800 2x2 dual concurrent M.2 B key Module
Test Item : 6dB Bandwidth Data
Test Mode : Transmit (802.11ax-20 MHz)-CDD

Channel No.	Frequency (MHz)	Chain	Measurement Level (kHz)	Required Limit (kHz)	Result
01	2412	A	18781	>500	Pass
06	2437	A	18861	>500	Pass
11	2462	A	18901	>500	Pass
01	2412	B	18462	>500	Pass
06	2437	B	18941	>500	Pass
11	2462	B	18861	>500	Pass

Figure Channel 01:

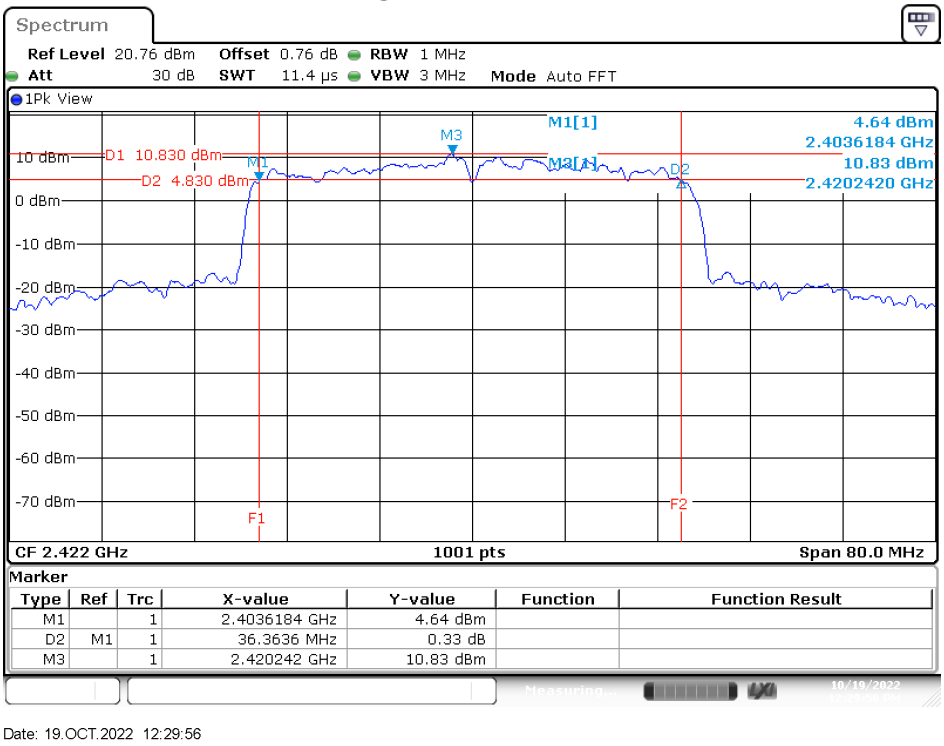


Date: 19.OCT.2022 12:15:50

Product : WiFi 6 ax1800 2x2 dual concurrent M.2 B key Module
Test Item : 6dB Bandwidth Data
Test Mode : Transmit (802.11ax-40 MHz)-CDD

Channel No.	Frequency (MHz)	Chain	Measurement Level (kHz)	Required Limit (kHz)	Result
03	2422	A	36364	>500	Pass
06	2437	A	37562	>500	Pass
09	2452	A	37163	>500	Pass
03	2422	B	37403	>500	Pass
06	2437	B	37403	>500	Pass
09	2452	B	37163	>500	Pass

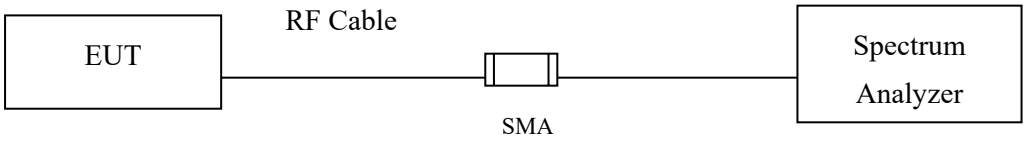
Figure Channel 03:



Date: 19.OCT.2022 12:29:56

8. Power Density

8.1. Test Setup



8.2. Limits

The transmitted power density averaged over any 1 second interval shall not be greater +8 dBm in any 3 kHz bandwidth.

8.3. Test Procedure

The EUT was setup according to ANSI C63.10, 2013; tested according to DTS test procedure of KDB 558074 for compliance to FCC 47CFR 15.247 requirements.
The maximum power spectral density using C63.10 Section 11.10.2 Method PKPSD (peak PSD)

The maximum power density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.
2400 MHz: Directional gain = 6.24 dBi, Limit = 7.76 dBm
Directional gain = $10 \log[(10^{G1/20} + 10^{G2/20})^2 / N_{ANT}]$ dBi

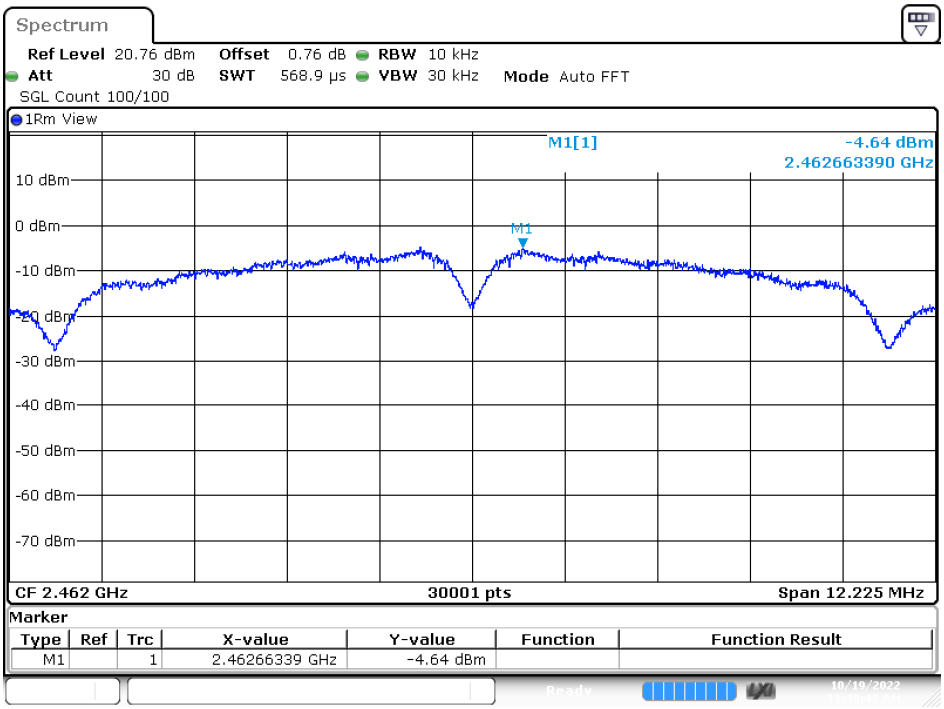
8.4. Test Result of Power Density

Product : WiFi 6 ax1800 2x2 dual concurrent M.2 B key Module
Test Item : Power Density Data
Test Mode : Transmit (802.11b)-CDD

Channel No.	Frequency (MHz)	Data Rate (Mbps)	Chain	PPSD/MHz (dBm)	Duty factor (dBm)	Total PPSD/MHz (dBm)	Limit (dBm)	Result
01	2412	1	A	-5.950	0.00	-3.02	7.76	Pass
			B	-6.110				
06	2437	1	A	-5.370	0.00	-2.13	7.76	Pass
			B	-4.920				
11	2462	1	A	-5.500	0.00	-2.04	7.76	Pass
			B	-4.640				

Note: Total PPSD/MHz = 10*log(Chain A (mW) + Chain B (mW)) + Duty factor.

Figure Channel 11:



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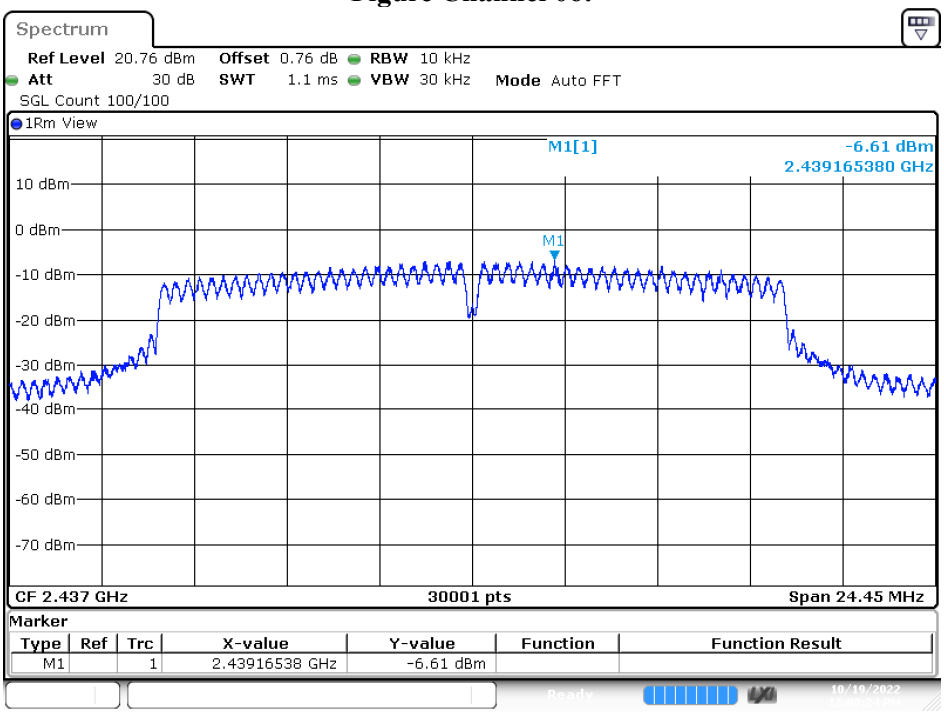
Product : WiFi 6 ax1800 2x2 dual concurrent M.2 B key Module
Test Item : Power Density Data
Test Mode : Transmit (802.11g)-CDD

Channel No.	Frequency (MHz)	Data Rate (Mbps)	Chain	PPSD/MHz (dBm)	Duty factor (dBm)	Total PPSD/MHz (dBm)	Limit (dBm)	Result
01	2412	6	A	-11.440	0.20	-8.78	7.76	Pass
			B	-12.620				
06	2437	6	A	-7.240	0.20	-3.70	7.76	Pass
			B	-6.610				
11	2462	6	A	-10.690	0.20	-7.51	7.76	Pass
			B	-10.740				

Note: Total PPSD/MHz = 10*log(Chain A (mW) + Chain B (mW)) + Duty factor.

Figure Channel 06:

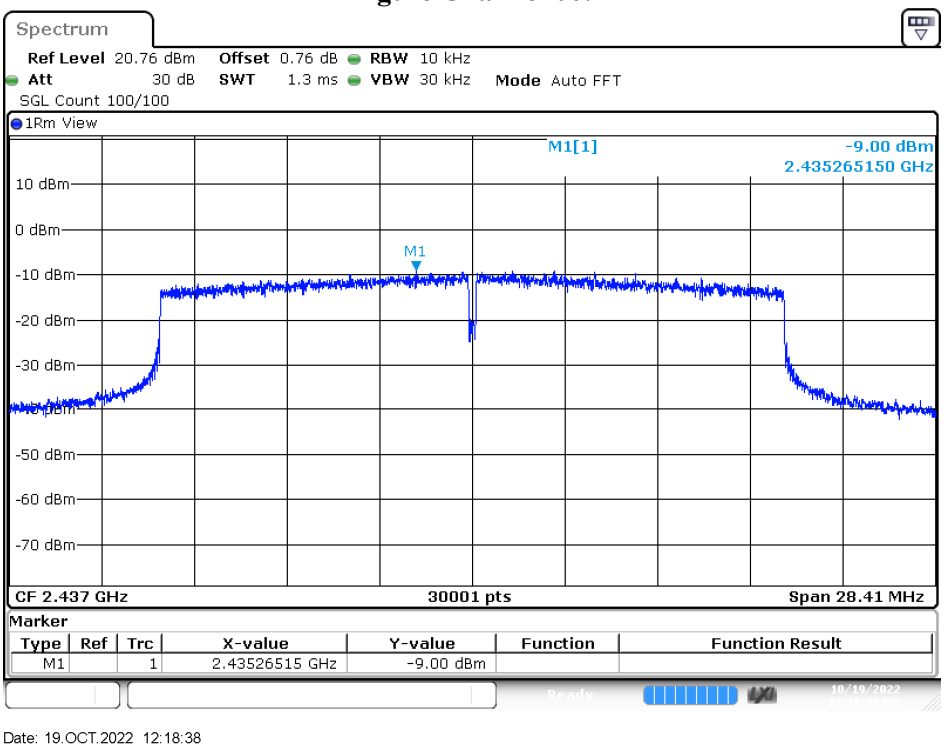


Product : WiFi 6 ax1800 2x2 dual concurrent M.2 B key Module
Test Item : Power Density Data
Test Mode : Transmit (802.11ax-20 MHz)-CDD

Channel No.	Frequency (MHz)	Data Rate	Chain	PPSD/MHz (dBm)	Duty factor (dBm)	Total PPSD/MHz (dBm)	Limit (dBm)	Result
01	2412	MCS0	A	-14.270	0.25	-11.23	7.76	Pass
			B	-14.720				
06	2437	MCS0	A	-9.470	0.25	-5.97	7.76	Pass
			B	-9.000				
11	2462	MCS0	A	-11.550	0.25	-8.61	7.76	Pass
			B	-12.210				

Note: Total PPSD/MHz = 10*log(Chain A (mW) + Chain B (mW)) + Duty factor.

Figure Channel 06:

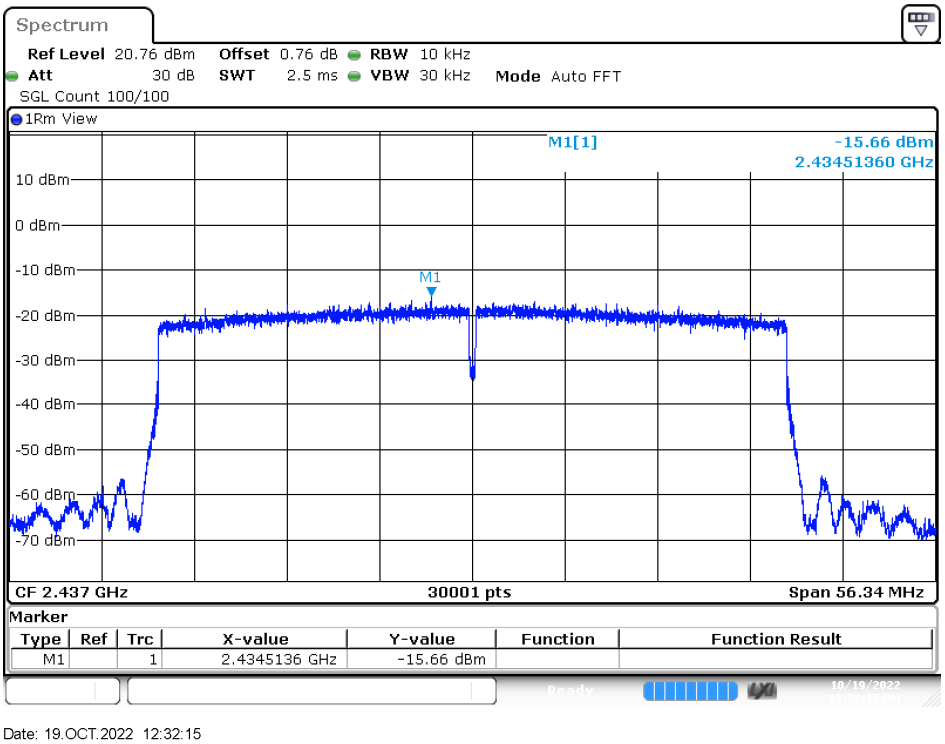


Product : WiFi 6 ax1800 2x2 dual concurrent M.2 B key Module
Test Item : Power Density Data
Test Mode : Transmit (802.11ax-40 MHz)-CDD

Channel No.	Frequency (MHz)	Data Rate	Chain	PPSD/MHz (dBm)	Duty factor (dBm)	Total PPSD/MHz (dBm)	Limit (dBm)	Result
03	2422	MCS0	A	-17.030	0.44	-13.98	7.76	Pass
			B	-17.860				
06	2437	MCS0	A	-15.660	0.44	-12.27	7.76	Pass
			B	-15.770				
09	2452	MCS0	A	-16.480	0.44	-13.03	7.76	Pass
			B	-16.480				

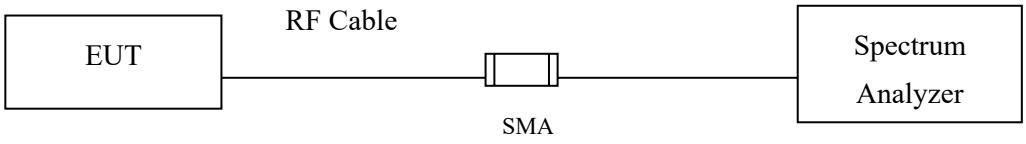
Note: Total PPSD/MHz = 10*log(Chain A (mW) + Chain B (mW)) + Duty factor

Figure Channel 06:



9. Duty Cycle

9.1. Test Setup



9.2. Test Procedure

The EUT was setup according to ANSI C63.10 2013; tested according to ANSI C63.10 2013 for compliance to FCC 47CFR 15.247 requirements.

9.3. Test Result of Duty Cycle

Product : WiFi 6 ax1800 2x2 dual concurrent M.2 B key Module
Test Item : Duty Cycle
Test Mode : Transmit-CDD mode

Duty Cycle Formula:

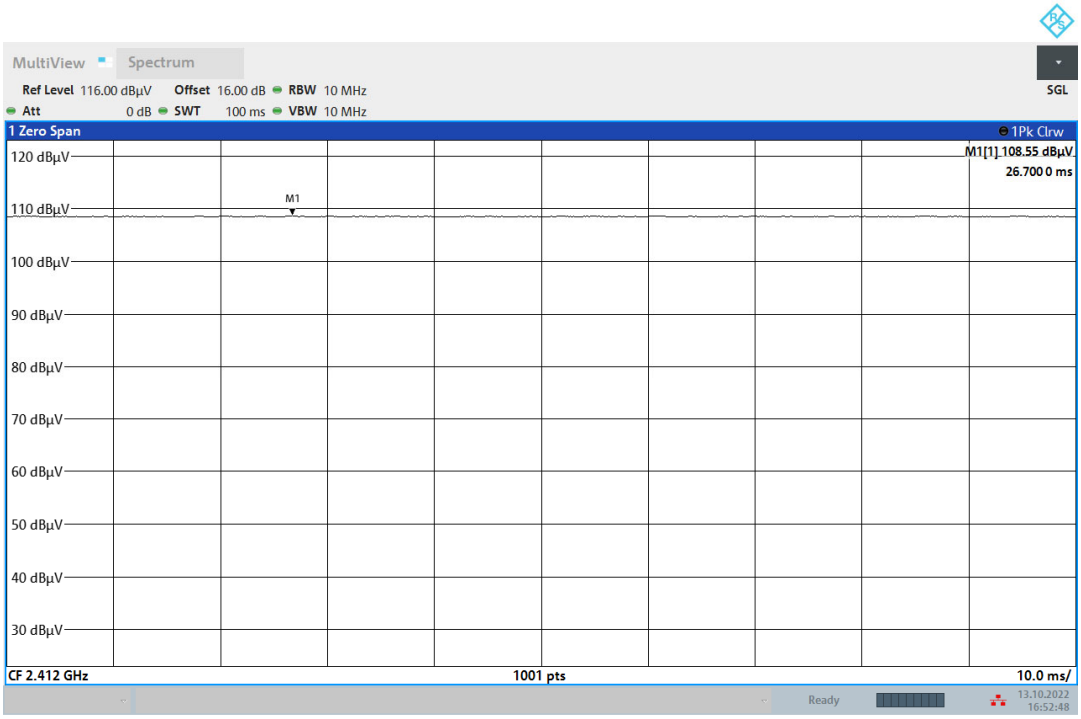
Duty Cycle = Ton / (Ton + Toff)

Duty Factor = 10 Log (1/Duty Cycle)

Results:

2.4 GHz band	Ton (ms)	Ton + Toff (ms)	Duty Cycle (%)	Duty Factor (dB)
802.11b	1.0000	1.0000	100.00	0.00
802.11g	1.3900	1.4550	95.53	0.20
802.11ax-20 MHz	1.0250	1.0850	94.47	0.25
802.11ax-40 MHz	0.5480	0.6060	90.43	0.44

802.11b



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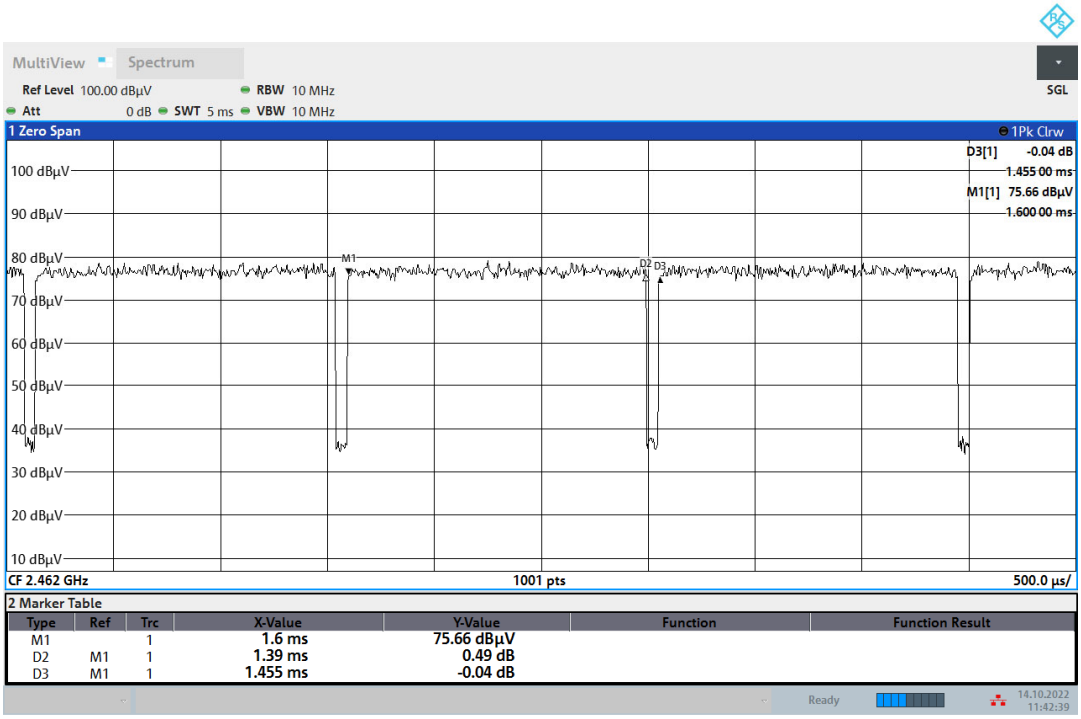
802.11g



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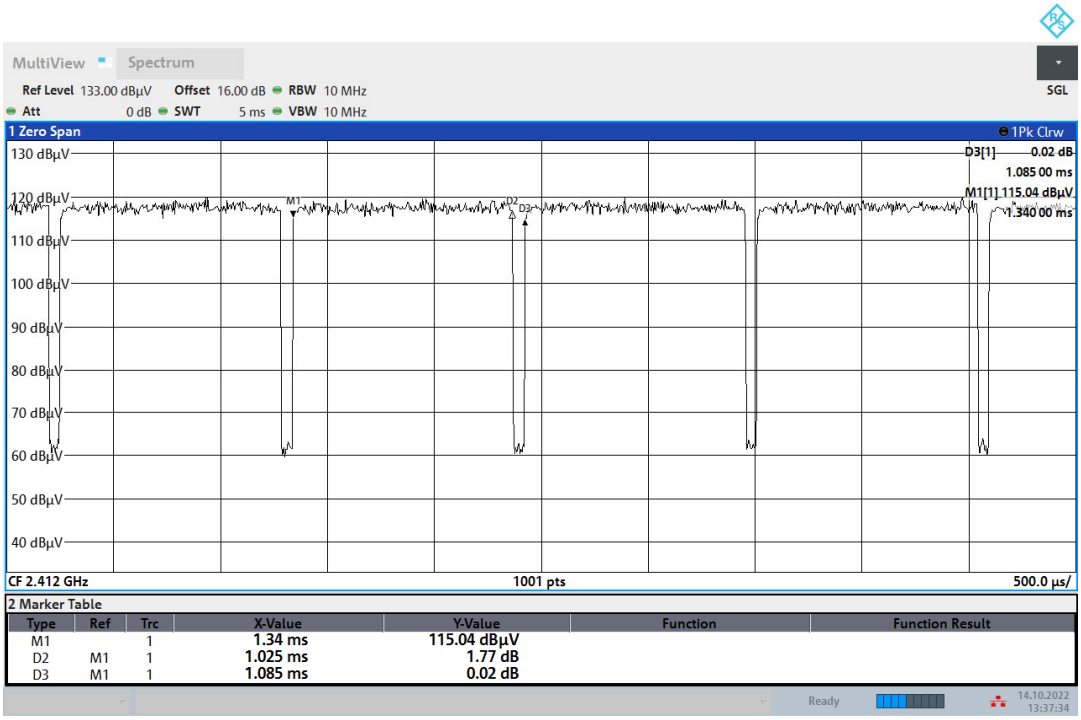
802.11ax-20 MHz



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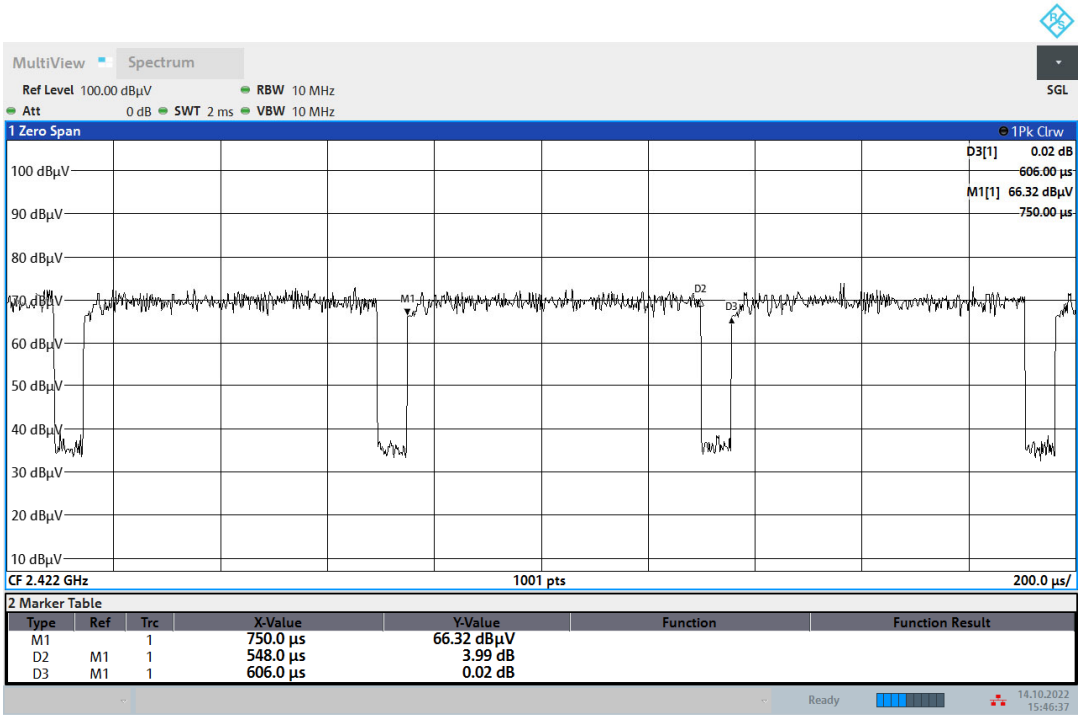
802.11ax-40 MHz



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