FCC Test Report

Product Name	IEEE802.11a/b/g/n 2.4+5GHz 1T1R Wi-Fi IoT Module
Model No	ITM-1066A
FCC ID.	2AWP5WM1066A

Applicant	IOTTECH Corporation
Address	No.10-1, Shijian Rd., Hukou Township, Hsinchu County 30352, Taiwan (R.O.C.)

Date of Receipt	Jun. 05, 2020
Issue Date	Aug. 17, 2020
Report No.	2060198R-E3032110113
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 of the equipment and evaluated measurement uncertainty herein.
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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

Issue Date: Aug. 17, 2020
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Product Name	IEEE802.11a/b/g/n 2.4+5GHz 1T1R Wi-Fi IoT Module
Applicant	IOTTECH Corporation
Address	No.10-1, Shijian Rd., Hukou Township, Hsinchu County 30352, Taiwan (R.O.C.)
Manufacturer	IOTTECH Corporation
Model No.	ITM-1066A
FCC ID.	2AWP5WM1066A
EUT Rated Voltage	DC 3.3V
EUT Test Voltage	DC 3.3V
Trade Name	IOTTECH
Applicable Standard	FCC CFR Title 47 Part 15 Subpart C ANSI C63.4: 2014, ANSI C63.10: 2013
Test Result	Complied

Documented By : April Chen

(Senior Adm. Specialist / April Chen)

Tested By : Yun Che Chen

(Engineer / Yunche Chen)

Approved By :

(Director / Vincent Lin)

TABLE OF CONTENTS

Revision History

Report No.	Version	Description	Issued Date
2060198R-E3032110113	V1.0	Initial issue of report.	2020-08-17

1. GENERAL INFORMATION

1.1. EUT Description

Product Name	IEEE802.11a/b/g/n 2.4+5GHz 1T1R Wi-Fi IoT Module
Trade Name	IOTTECH
Model No.	ITM-1066A
FCC ID.	2AWP5WM1066A
Frequency Range	2412-2462MHz for 802.11b/g/n-20BW, 2422-2452MHz for 802.11n-40BW
Number of Channels	802.11b/g/n-20MHz: 11, n-40MHz: 7
Data Speed	802.11b: 1-11Mbps, 802.11g: 6-54Mbps, 802.11n: up to 150Mbps
Channel separation	802.11b/g/n: 5 MHz
Type of Modulation	802.11b:DSSS (DBPSK, DQPSK, CCK) 802.11g/n:OFDM (BPSK, QPSK, 16QAM, 64QAM)
Antenna Type	PCB Antenna
Antenna Gain	Refer to the table “Antenna List”
Channel Control	Auto

Antenna List

No.	Manufacturer	Part No.	Antenna Type	Peak Gain
1	IOTTECH	ITM-1066A	PCB Antenna	1.376dBi for 2.4GHz

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

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

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

802.11n-40MHz Center Frequency of Each Channel:

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

Note:

1. The EUT is an IEEE802.11a/b/g/n 2.4+5GHz 1T1R Wi-Fi IoT Module with a built-in 2.4GHz and 5GHz WLAN transceiver , this report for 2.4GHz WLAN.
2. The radiation measurements are performed in X, Y, Z axis positioning. Only the worst case is shown in the report.
3. Regarding to the operation frequency, the lowest, middle and highest frequency are selected to perform the test.
4. Lowest and highest data rates are tested in each mode. Only worst case is shown in the report. (802.11b is 1Mbps、802.11g is 6Mbps、802.11n(20M-BW) is 7.2Mbps and 802.11n(40M-BW) is 15Mbps)
5. These tests are conducted on a sample for the purpose of demonstrating compliance of 802.11b/g/n transmitter with Part 15 Subpart C Paragraph 15.247 of spread spectrum devices.

Test Mode:	Mode 1: Transmit (802.11b 1Mbps)
	Mode 2: Transmit (802.11g 6Mbps)
	Mode 3: Transmit (802.11n MCS0 7.2Mbps 20M-BW)
	Mode 4: Transmit (802.11n MCS0 15Mbps 40M-BW)

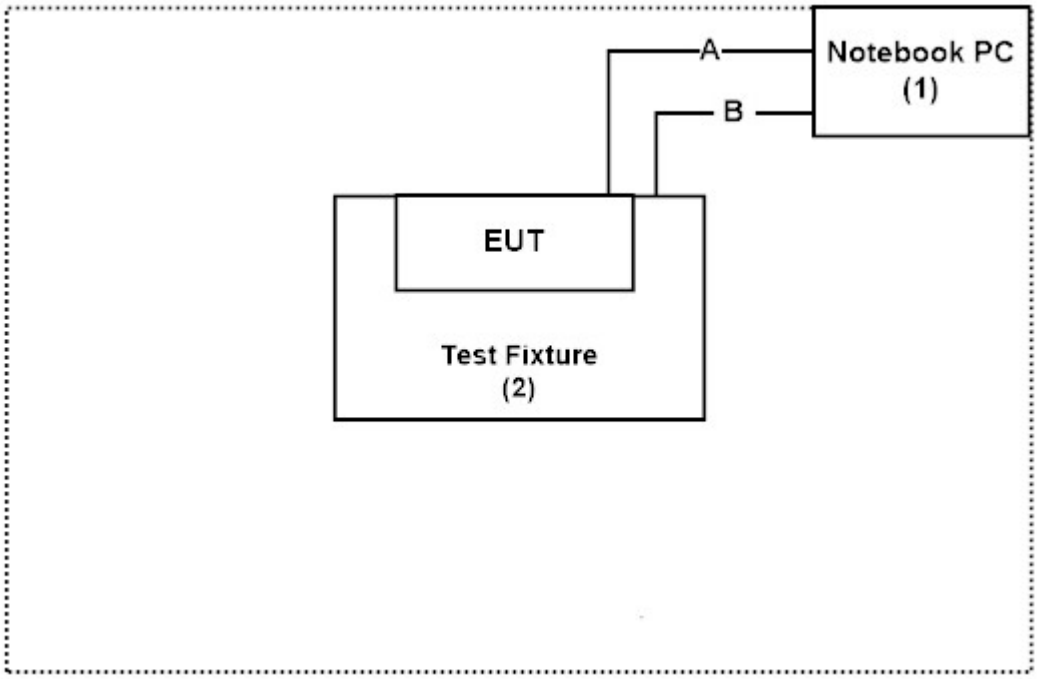
1.3. Tested System Details

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	Notebook PC	DELL	Latitude 5580	GDZN7H2	Non-Shielded, 0.8m
2	Test Fixture	Brickcom Corporation	N/A	N/A	N/A

Signal Cable Type		Signal cable Description
A	USB Cable	Non-shielded, 1.7m
B	Signal Cable	Non-shielded, 1.7m

1.4. Configuration of Tested System



1.5. EUT Exercise Software

1. Setup the EUT as shown in Section 1.4.
2. Execute software “Tera Tern ver. 4.99” on the EUT.
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.

1.6. Test Facility

Ambient conditions in the laboratory:

Performed Item	Items	Required	Actual
Conducted Emission	Temperature (°C)	10~40 °C	25.6 °C
	Humidity (%RH)	10~90 %	49 %
Radiated Emission	Temperature (°C)	10~40 °C	27.8 °C
	Humidity (%RH)	10~90 %	80 %
Conductive	Temperature (°C)	10~40 °C	28.4 °C
	Humidity (%RH)	10~90 %	62.6 %

USA : FCC Registration Number: TW3023
Canada : IC Registration Number: 4075A

Site Description: Accredited by TAF
Accredited Number: 3023

Test Laboratory: DEKRA Testing and Certification Co., Ltd
Address: No.5-22, Ruishukeng, Linkou Dist., New Taipei City 24451, Taiwan, R.O.C.
Phone number: 886-2-8601-3788
Fax number: 886-2-8601-3789
Email address: info.tw@dekra.com
Website: http://www.dekra.com.tw

1.7. List of Test Item and Equipment

For Conducted measurements /CB3/SR8

	Equipment	Manufacturer	Model No.	Serial No.	Cali. Date	Due. Date
	Temperature Chamber	WIT GROUP	TH-1S-B	EQ-201-00146	2020/04/06	2021/04/05
X	Spectrum Analyzer	Agilent	N9010A	MY53470892	2019/09/25	2020/09/24
X	Peak Power Analyzer	Keysight	8990B	MY51000410	2019/07/30	2020/07/29
X	Wideband Power Sensor	Keysight	N1923A	MY56080003	2019/07/30	2020/07/29
X	Wideband Power Sensor	Keysight	N1923A	MY56080004	2019/07/30	2020/07/29
X	EMI Test Receiver	R&S	ESCS 30	100369	2019/11/27	2020/11/26
X	LISN	R&S	ENV216	101105	2020/04/27	2021/04/26
X	LISN	R&S	ESH3-Z5	836679/014	2020/04/26	2021/04/25
X	Coaxial Cable	DEKRA	RG 400	LC018-RG	2020/06/19	2021/06/18

Note:

1. All equipments are calibrated every one year.
2. The test instruments marked with “X” are used to measure the final test results.
3. Test Software version : DEKRA Conduction Test SystemV9.0.5.

For Radiated measurements /Site3/CB8

	Equipment	Manufacturer	Model No.	Serial No.	Cali. Date	Due. Date
X	Test Receiver	R&S	ESR7	101602	2019/12/16	2020/12/15
X	Signal Analyzer	R&S	FSV40	101869	2020/06/24	2021/06/23
X	Loop Antenna	Teseq	HLA6121	37133	2019/10/15	2021/10/14
X	Bilog Antenna	Schaffner Chase	CBL6112B	2916	2020/01/20	2021/01/19
X	Coaxial Cable	DEKRA	L1907-001C	280280.F141.1000D	2019/07/09	2020/07/08
X	Amplifier	EMCI	EMC001330	980254	2020/06/11	2021/06/10
X	Horn Antenna	ETS-LINDGREN	3117	00228113	2020/05/28	2021/05/27
X	Coaxial Cable	DEKRA	L1907-002C	280280.F141.1000D	2019/07/09	2020/07/08
X	Amplifier	EMCI	EMC05820SE	980361	2019/09/23	2020/09/22
X	Amplifier	EMCI	EMC051845SE	980632	2019/08/08	2020/08/07
	Amplifier	SGH	PRAMP118	20200202	2020/03/17	2021/03/16
	Horn Antenna	Com-Power	AH-1840	101101	2019/10/31	2020/10/30
	Amplifier + Cable	EMCI	EMC184045SE	980369	2020/04/23	2021/04/22
	Bilog Antenna	Schaffner Chase	CBL6112B	2925	2020/02/20	2021/02/19
	Coaxial Cable	DEKRA	L1907-003C	00100A1B3A120M	2020/07/09	2021/07/08
	Amplifier	EMCI	EMC001330	980255	2020/03/17	2021/03/16
X	Filter	MICRO-TRONICS	BRM50702	G270	2019/08/08	2020/08/07
	Filter	MICRO-TRONICS	BRM50716	G196	2019/08/08	2020/08/07

Note:

1. Loop Antenna is calibrated every two years, the other equipments are calibrated every one year.
2. The test instruments marked with “X” are used to measure the final test results.
3. Test Software version : DEKRA Test SystemV1.1.

1.8. Uncertainty

Uncertainties have been calculated according to the DEKRA internal document, and is described in each test chapter of this report.

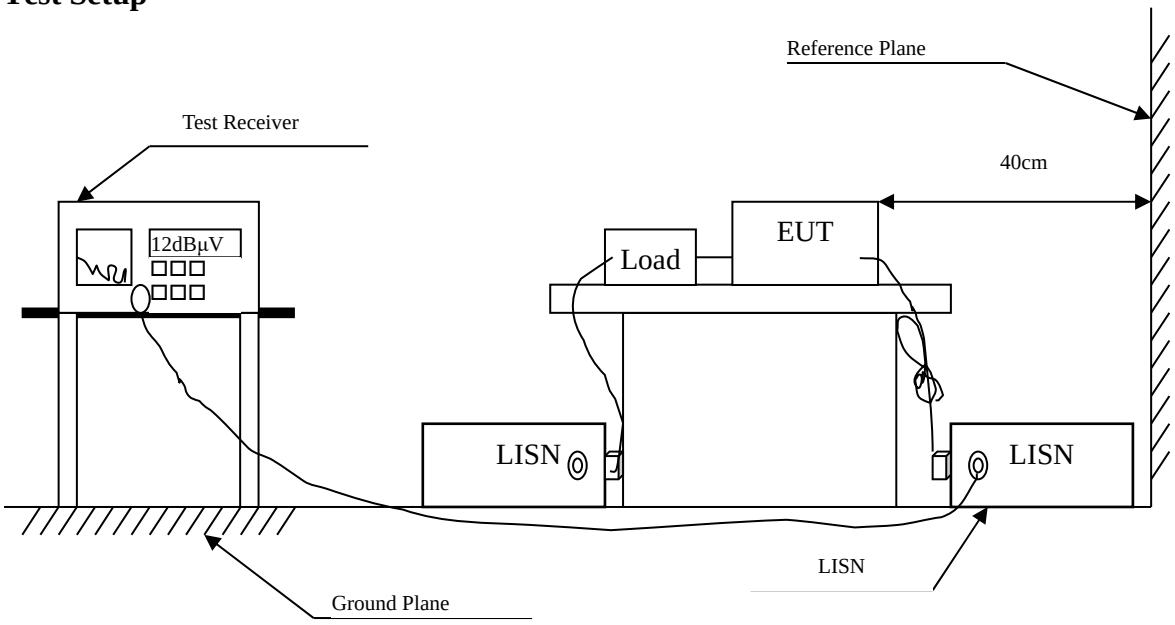
The reported expanded uncertainties are based on a standard uncertainty multiplied by a coverage factor of k=2, providing a level of confidence of approximately 95%.

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	±3.42dB	
Peak Power Output	Power Meter ±0.89dB	Spectrum Analyzer ±2.06dB
Radiated Emission	9kHz~30MHz: ±3.88dB 30MHz~1GHz: ±4.06dB 1GHz~18GHz: ±3.71dB 18GHz~40GHz: ±3.73dB 40GHz~50GHz: ±3.75dB 50GHz~325GHz: ±4.39dB	
RF antenna conducted test	±2.06dB	
Band Edge	9kHz~30MHz: ±3.88dB 30MHz~1GHz: ±4.06dB 1GHz~18GHz: ±3.71dB 18GHz~40GHz: ±3.73dB 40GHz~50GHz: ±3.75dB 50GHz~325GHz: ±4.39dB	
6dB Bandwidth	±1544.74Hz	
Power Density	±2.06dB	
Duty Cycle (2.4GHz)	±2.31msec	

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

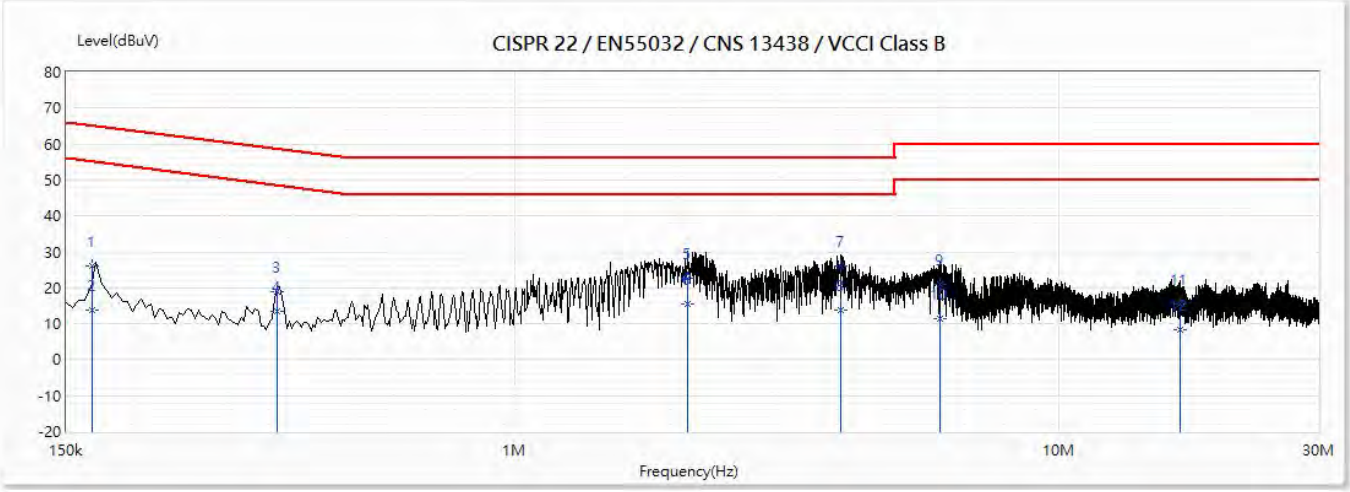
2.3. Test Procedure

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 /50uH coupling impedance for the measuring equipment. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm /50uH coupling impedance with 50ohm 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 0.15MHz to 30MHz using a receiver bandwidth of 9kHz.

2.4. Test Result of Conducted Emission

Product	:	IEEE802.11a/b/g/n 2.4+5GHz 1T1R Wi-Fi IoT Module
Test Item	:	Conducted Emission Test
Test Mode	:	Mode 4: Transmit (802.11n MCS0 15Mbps 40M-BW) (2437MHz)
Test Date	:	2020/07/07

Line1



No	Frequency (MHz)	Emission Level (dBuV)	Limit (dBuV)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB)	Detector Type
1	0.167	25.92	65.10	-39.18	16.11	9.81	QP
2	0.167	13.89	55.10	-41.21	4.08	9.81	AV
3	0.366	18.89	58.59	-39.70	9.09	9.80	QP
4	0.366	13.39	48.59	-35.20	3.60	9.80	AV
5	2.079	22.71	56.00	-33.29	12.86	9.85	QP
6	2.079	15.61	46.00	-30.39	5.76	9.85	AV
*7	3.981	26.24	56.00	-29.76	16.32	9.92	QP
8	3.981	13.69	46.00	-32.31	3.77	9.92	AV
9	6.032	21.00	60.00	-39.00	11.03	9.97	QP
10	6.032	11.26	50.00	-38.74	1.29	9.97	AV
11	16.66	15.54	60.00	-44.46	5.37	10.17	QP
12	16.66	8.20	50.00	-41.80	-1.97	10.17	AV

Remark:

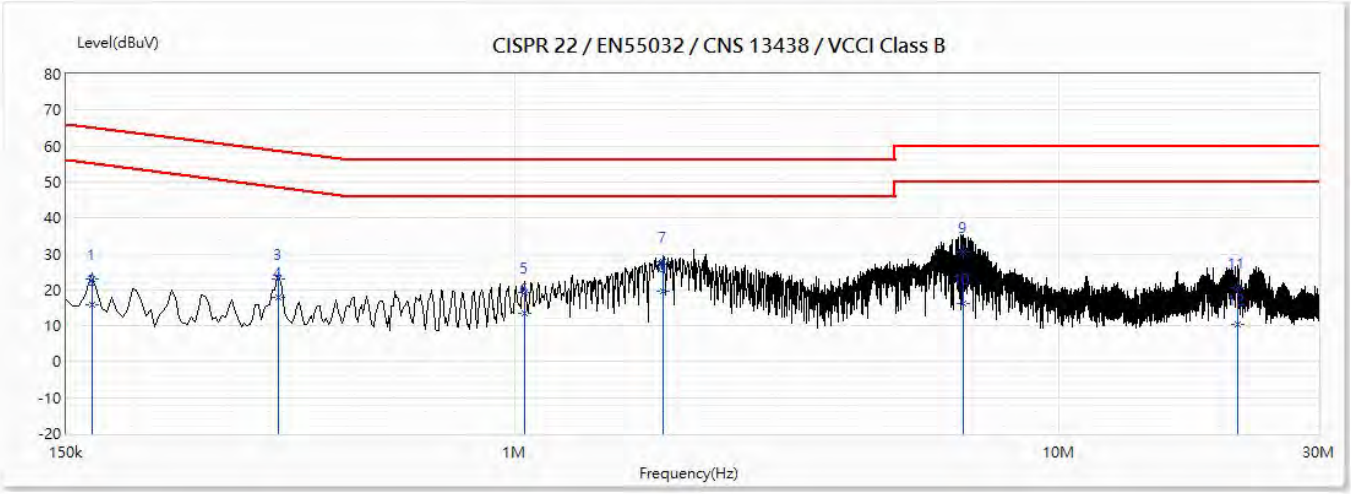
1. "*" means this data is the worst emission level;"!" means this data is over limit.

2. Emission Level=Reading Level + Correct Factor(Correct Factor=LISN Factor+Cable Loss).

3. Margin=Emission Level-Limit

Product	:	IEEE802.11a/b/g/n 2.4+5GHz 1T1R Wi-Fi IoT Module
Test Item	:	Conducted Emission Test
Test Mode	:	Mode 4: Transmit (802.11n MCS0 15Mbps 40M-BW) (2437MHz)
Test Date	:	2020/07/07

N



No	Frequency (MHz)	Emission Level (dBuV)	Limit (dBuV)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB)	Detector Type
1	0.167	22.89	65.09	-42.20	13.10	9.79	QP
2	0.167	15.95	55.09	-39.15	6.16	9.79	AV
3	0.367	22.85	58.56	-35.71	13.06	9.79	QP
4	0.367	17.72	48.56	-30.84	7.93	9.79	AV
5	1.04	19.23	56.00	-36.77	9.44	9.79	QP
6	1.04	13.37	46.00	-32.63	3.58	9.79	AV
7	1.878	27.66	56.00	-28.34	17.83	9.84	QP
*8	1.878	19.66	46.00	-26.34	9.83	9.84	AV
9	6.654	30.46	60.00	-29.54	20.48	9.98	QP
10	6.654	16.09	50.00	-33.91	6.10	9.98	AV
11	21.337	20.45	60.00	-39.55	10.08	10.37	QP
12	21.337	10.24	50.00	-39.76	-0.13	10.37	AV

Remark:

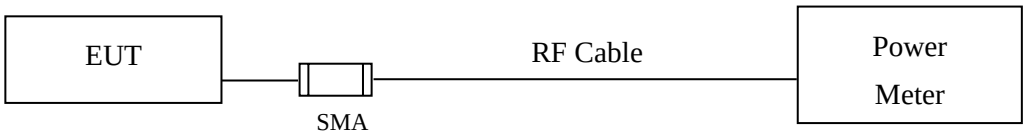
1. "*" means this data is the worst emission level;"!" means this data is over limit.

2. Emission Level=Reading Level + Correct Factor(Correct Factor=LISN Factor+Cable Loss).

3. Margin=Emission Level-Limit

3. Peak 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).

3.4. Test Result of Peak Power Output

Product : IEEE802.11a/b/g/n 2.4+5GHz 1T1R Wi-Fi IoT Module
Test Item : Peak Power Output Data
Test Mode : Mode 1: Transmit (802.11b 1Mbps)
Test Date : 2020/06/18

Channel No	Frequency (MHz)	Average Power For different Data Rate (Mbps)				Peak Power	Required Limit	Result
		1	2	5.5	11	1		
		Measurement Level (dBm)						
01	2412	17.95	--	--	--	19.55	<30dBm	Pass
06	2437	17.57	17.51	17.47	17.4	19.18	<30dBm	Pass
11	2462	17.73	--	--	--	19.29	<30dBm	Pass

Note: Peak Power Output Value =Reading value on power meter + cable loss

Product : IEEE802.11a/b/g/n 2.4+5GHz 1T1R Wi-Fi IoT Module
Test Item : Peak Power Output Data
Test Mode : Mode 2: Transmit (802.11g 6Mbps)
Test Date : 2020/06/18

Channel No	Frequency (MHz)	Average Power For different Data Rate (Mbps)								Peak Power	Required Limit	Result
		6	9	12	18	24	36	48	54	6		
		Measurement Level (dBm)										
01	2412	13.68	--	--	--	--	--	--	--	22.82	<30dBm	Pass
06	2437	13.78	13.71	13.58	13.44	13.28	13.19	13.06	12.94	22.32	<30dBm	Pass
11	2462	13.86	--	--	--	--	--	--	--	23.28	<30dBm	Pass

Note: Peak Power Output Value =Reading value on power meter + cable loss

Product : IEEE802.11a/b/g/n 2.4+5GHz 1T1R Wi-Fi IoT Module
Test Item : Peak Power Output Data
Test Mode : Mode 3: Transmit (802.11n MCS0 7.2Mbps 20M-BW)
Test Date : 2020/06/18

Channel No	Frequency (MHz)	Average Power For different Data Rate (Mbps)								Peak Power	Required Limit	Result
		7.2	14.4	21.7	28.9	43.3	57.8	65	72.2	7.2		
		Measurement Level (dBm)										
01	2412	13.68	--	--	--	--	--	--	--	22.34	<30dBm	Pass
06	2437	13.89	13.77	13.69	13.53	13.42	13.39	13.36	13.2	22.95	<30dBm	Pass
11	2462	13.98	--	--	--	--	--	--	--	23.01	<30dBm	Pass

Note: Peak Power Output Value =Reading value on power meter + cable loss

Product : IEEE802.11a/b/g/n 2.4+5GHz 1T1R Wi-Fi IoT Module
Test Item : Peak Power Output Data
Test Mode : Mode 4: Transmit (802.11n MCS0 15Mbps 40M-BW)
Test Date : 2020/06/18

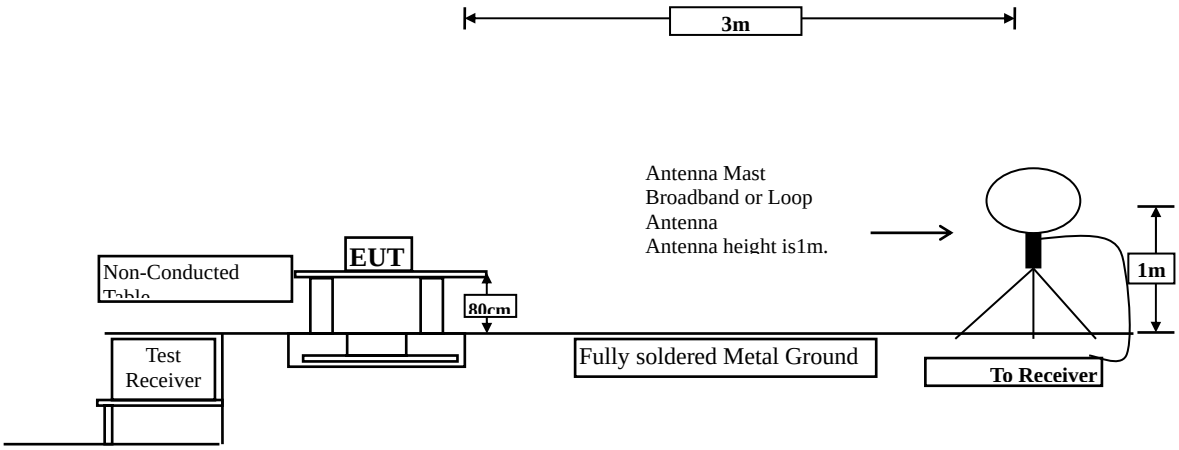
Channel No	Frequency (MHz)	Average Power For different Data Rate (Mbps)								Peak Power	Required Limit	Result
		15	30	45	60	90	120	135	150	15		
		Measurement Level (dBm)										
03	2422	13.66	--	--	--	--	--	--	--	22.64	<30dBm	Pass
06	2437	13.61	13.55	13.45	13.42	13.3	13.26	13.16	13.06	23.01	<30dBm	Pass
09	2452	13.78	--	--	--	--	--	--	--	22.89	<30dBm	Pass

Note: Peak Power Output Value =Reading value on power meter + cable loss

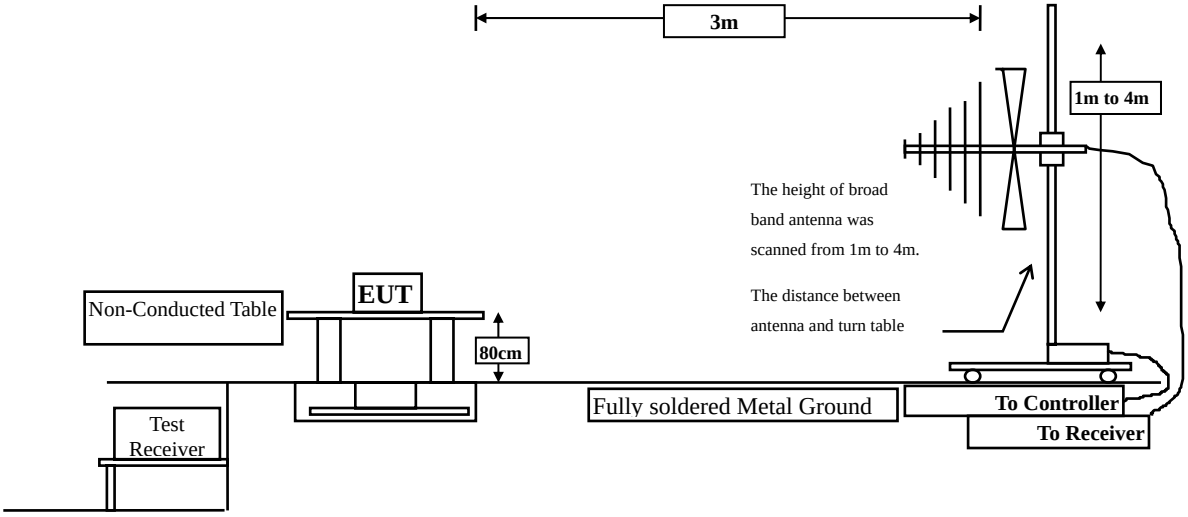
4. Radiated Emission

4.1. Test Setup

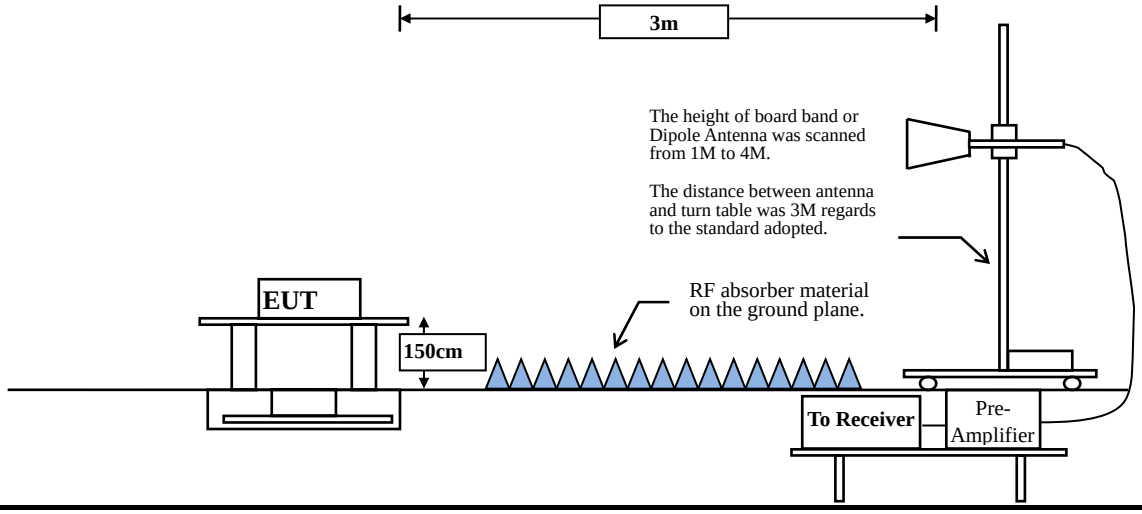
Radiated Emission Under 30MHz



Radiated Emission Below 1GHz



Radiated Emission Above 1GHz



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 (dBuV) = 20 log RF Voltage (uV)
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 = 1MHz.

VBW = 10Hz, 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.)

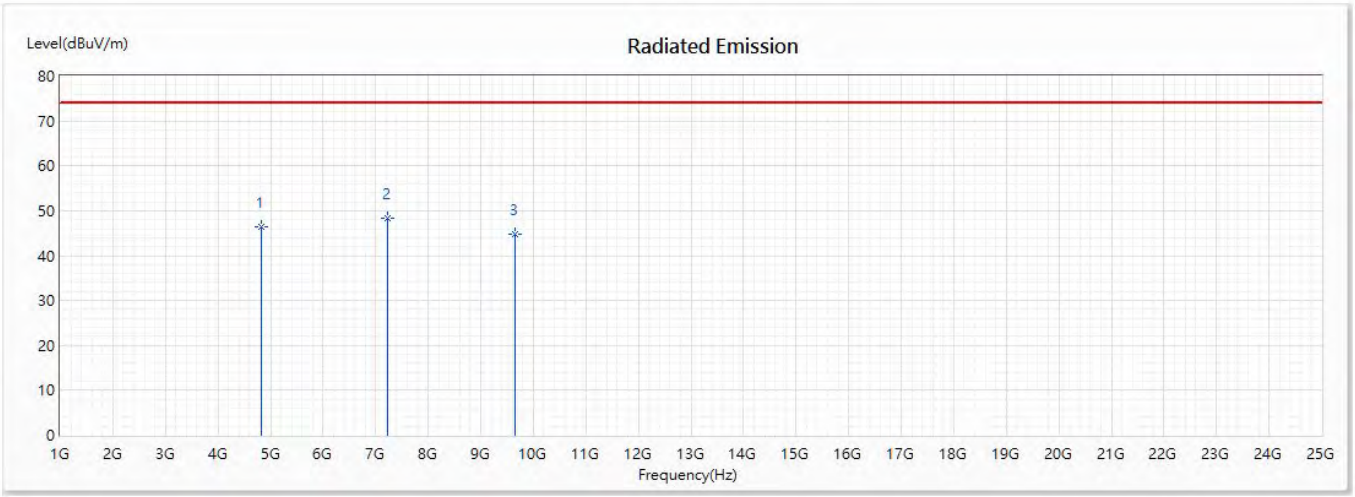
2.4GHz band	Duty Cycle (%)	T (ms)	1/T (Hz)	VBW (Hz)
802.11b	100.00	1.0000	1000	10
802.11g	97.43	1.3739	728	1000
802.11n20	99.60	5.0826	197	10
802.11n40	97.96	2.4348	411	500

Note: Duty Cycle Refer to Section 9.

4.4. Test Result of Radiated Emission

Product	:	IEEE802.11a/b/g/n 2.4+5GHz 1T1R Wi-Fi IoT Module
Test Item	:	Harmonic Radiated Emission Data
Test Mode	:	Mode 1: Transmit (802.11b 1Mbps) (2412MHz)
Test Date	:	2020/06/29

Horizontal



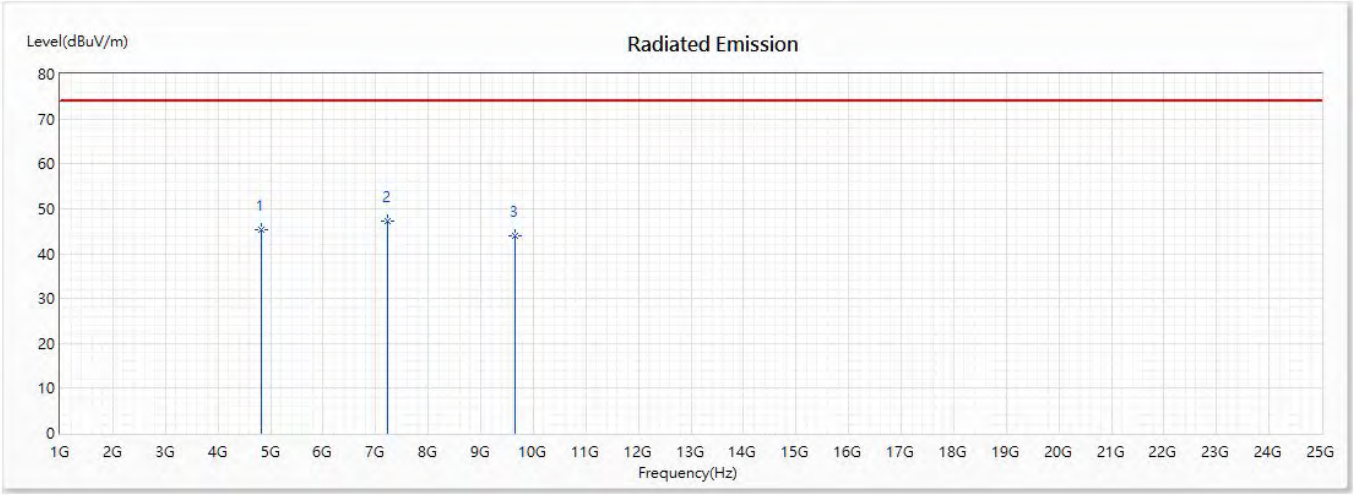
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
1	4824	46.32	74.00	-27.68	58.31	-11.99	PK
* 2	7236	48.29	74.00	-25.71	61.09	-12.80	PK
3	9648	44.68	74.00	-29.32	57.68	-13.00	PK

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Emission Level = Reading Level + Correct Factor.
3. Correct Factor = Antenna factor + Cable loss –Amplifier gain.
4. The average measurement was not performed when the peak measured data under the limit of average detection.
5. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product	:	IEEE802.11a/b/g/n 2.4+5GHz 1T1R Wi-Fi IoT Module
Test Item	:	Harmonic Radiated Emission Data
Test Mode	:	Mode 1: Transmit (802.11b 1Mbps) (2412MHz)
Test Date	:	2020/06/29

Vertical



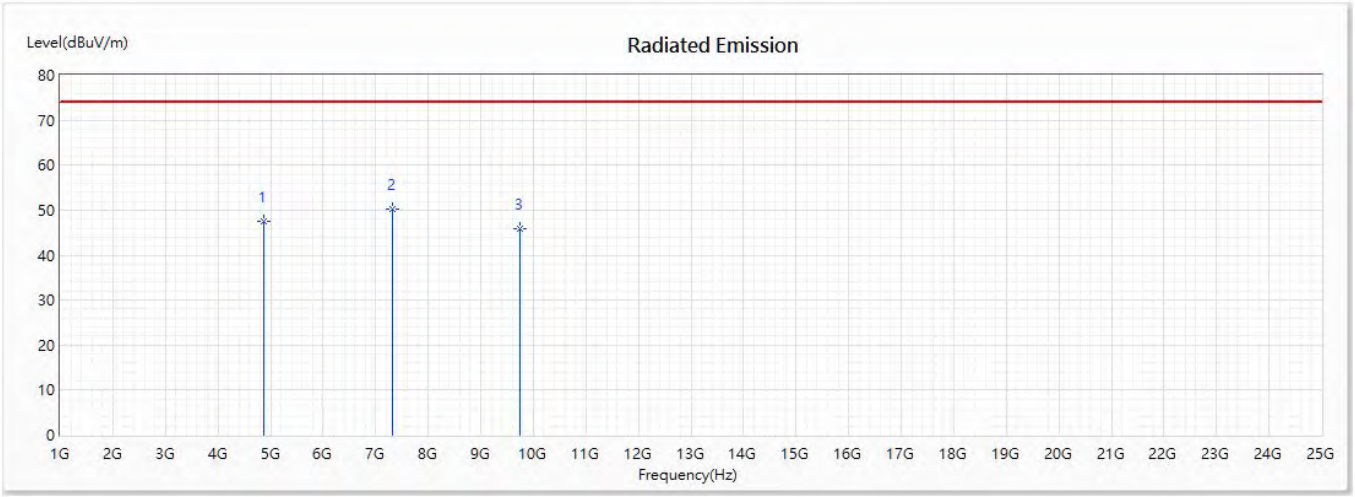
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
1	4824	45.21	74.00	-28.79	57.20	-11.99	PK
* 2	7236	47.31	74.00	-26.69	60.11	-12.80	PK
3	9648	44.01	74.00	-29.99	57.01	-13.00	PK

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Emission Level = Reading Level + Correct Factor.
3. Correct Factor = Antenna factor + Cable loss –Amplifier gain.
4. The average measurement was not performed when the peak measured data under the limit of average detection.
5. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product	:	IEEE802.11a/b/g/n 2.4+5GHz 1T1R Wi-Fi IoT Module
Test Item	:	Harmonic Radiated Emission Data
Test Mode	:	Mode 1: Transmit (802.11b 1Mbps) (2437MHz)
Test Date	:	2020/06/29

Horizontal



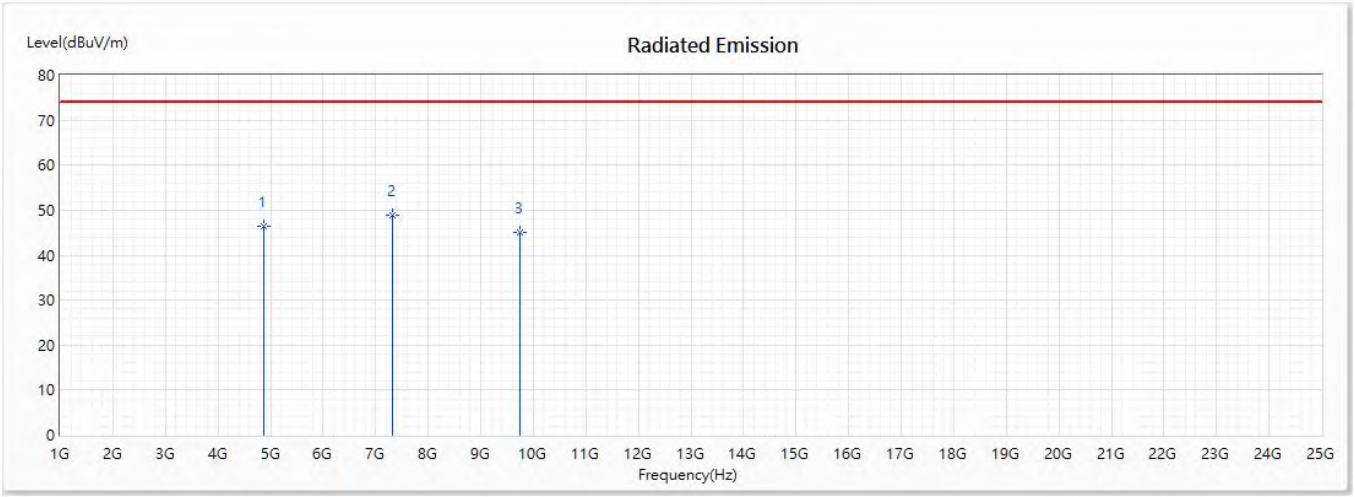
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
1	4874	47.62	74.00	-26.38	59.11	-11.49	PK
* 2	7311	50.35	74.00	-23.65	63.73	-13.38	PK
3	9748	45.95	74.00	-28.05	58.14	-12.19	PK

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Emission Level = Reading Level + Correct Factor.
3. Correct Factor = Antenna factor + Cable loss –Amplifier gain.
4. The average measurement was not performed when the peak measured data under the limit of average detection.
5. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product	:	IEEE802.11a/b/g/n 2.4+5GHz 1T1R Wi-Fi IoT Module
Test Item	:	Harmonic Radiated Emission Data
Test Mode	:	Mode 1: Transmit (802.11b 1Mbps) (2437MHz)
Test Date	:	2020/06/29

Vertical



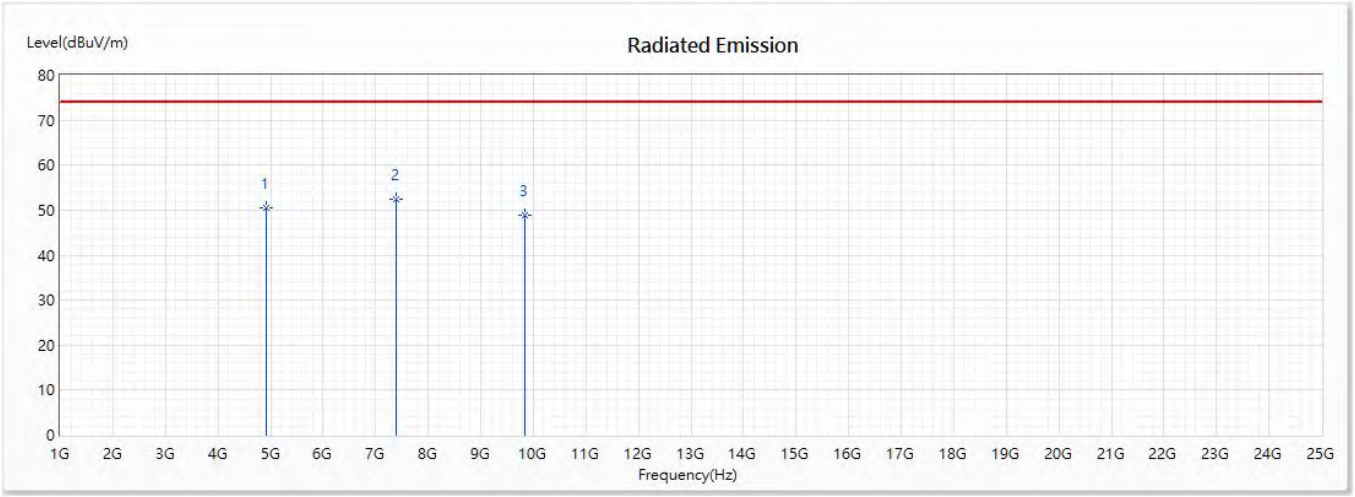
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
1	4874	46.39	74.00	-27.61	57.88	-11.49	PK
* 2	7311	49.01	74.00	-24.99	62.39	-13.38	PK
3	9748	45.15	74.00	-28.85	57.34	-12.19	PK

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Emission Level = Reading Level + Correct Factor.
3. Correct Factor = Antenna factor + Cable loss –Amplifier gain.
4. The average measurement was not performed when the peak measured data under the limit of average detection.
5. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product	:	IEEE802.11a/b/g/n 2.4+5GHz 1T1R Wi-Fi IoT Module
Test Item	:	Harmonic Radiated Emission Data
Test Mode	:	Mode 1: Transmit (802.11b 1Mbps) (2462MHz)
Test Date	:	2020/06/29

Horizontal



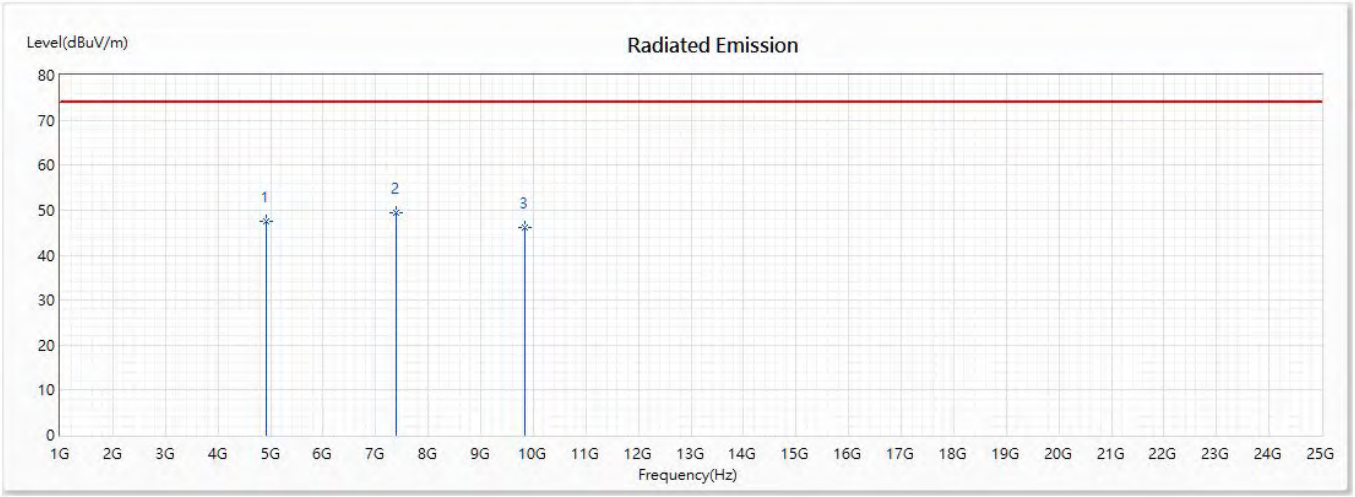
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
1	4924	50.49	74.00	-23.51	61.53	-11.04	PK
* 2	7386	52.35	74.00	-21.65	66.35	-14.00	PK
3	9848	48.82	74.00	-25.18	62.06	-13.24	PK

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Emission Level = Reading Level + Correct Factor.
3. Correct Factor = Antenna factor + Cable loss –Amplifier gain.
4. The average measurement was not performed when the peak measured data under the limit of average detection.
5. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product	:	IEEE802.11a/b/g/n 2.4+5GHz 1T1R Wi-Fi IoT Module
Test Item	:	Harmonic Radiated Emission Data
Test Mode	:	Mode 1: Transmit (802.11b 1Mbps) (2462MHz)
Test Date	:	2020/06/29

Vertical



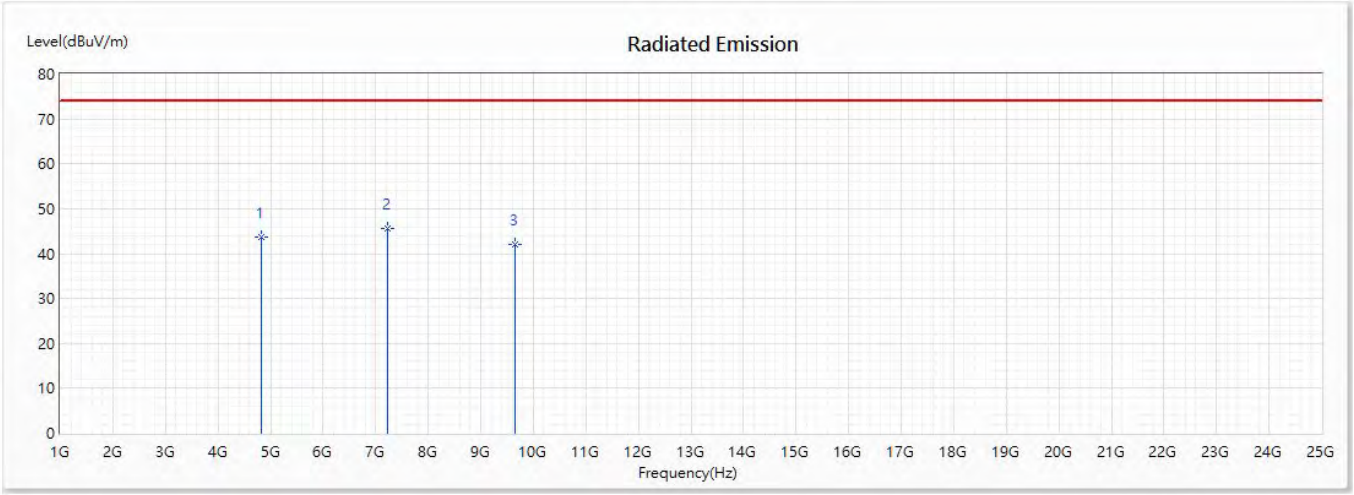
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
1	4924	47.45	74.00	-26.55	58.49	-11.04	PK
* 2	7386	49.47	74.00	-24.53	63.47	-14.00	PK
3	9848	46.23	74.00	-27.77	59.47	-13.24	PK

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Emission Level = Reading Level + Correct Factor.
3. Correct Factor = Antenna factor + Cable loss –Amplifier gain.
4. The average measurement was not performed when the peak measured data under the limit of average detection.
5. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product	:	IEEE802.11a/b/g/n 2.4+5GHz 1T1R Wi-Fi IoT Module
Test Item	:	Harmonic Radiated Emission Data
Test Mode	:	Mode 2: Transmit (802.11g 6Mbps) (2412MHz)
Test Date	:	2020/06/29

Horizontal



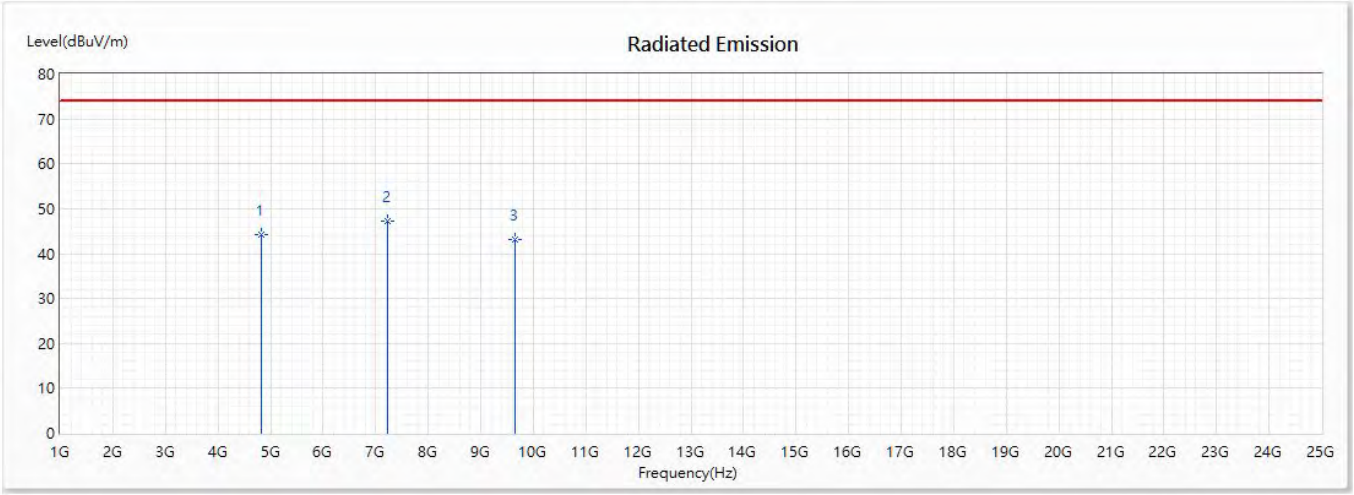
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
1	4824	43.77	74.00	-30.23	55.76	-11.99	PK
* 2	7236	45.66	74.00	-28.34	58.46	-12.80	PK
3	9648	42.05	74.00	-31.95	55.05	-13.00	PK

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Emission Level = Reading Level + Correct Factor.
3. Correct Factor = Antenna factor + Cable loss –Amplifier gain.
4. The average measurement was not performed when the peak measured data under the limit of average detection.
5. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product	:	IEEE802.11a/b/g/n 2.4+5GHz 1T1R Wi-Fi IoT Module
Test Item	:	Harmonic Radiated Emission Data
Test Mode	:	Mode 2: Transmit (802.11g 6Mbps) (2412MHz)
Test Date	:	2020/06/29

Vertical



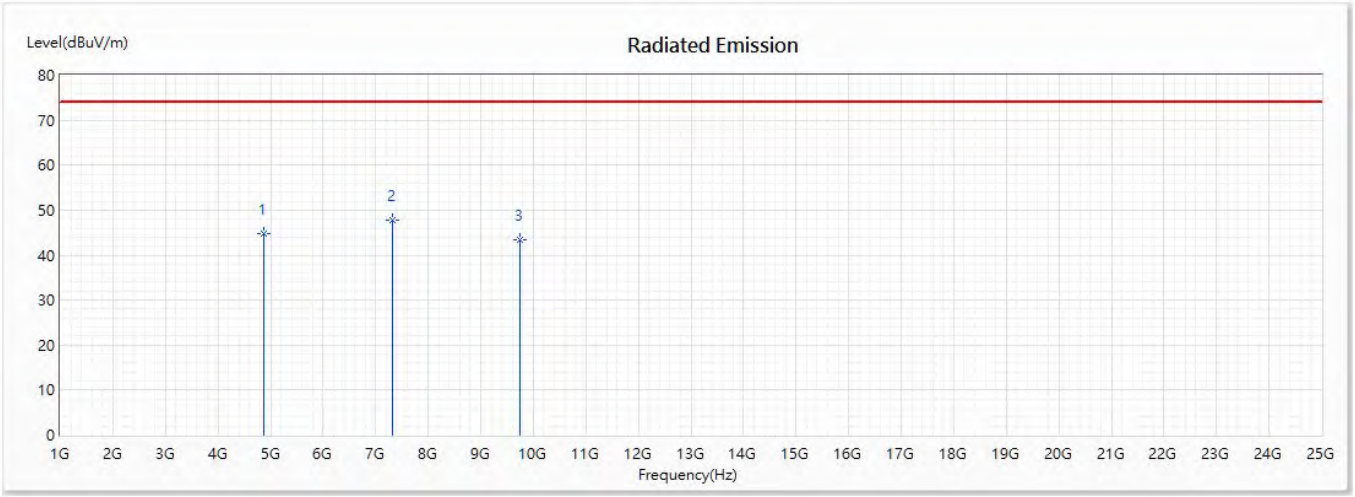
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
1	4824	44.25	74.00	-29.75	56.24	-11.99	PK
* 2	7236	47.18	74.00	-26.82	59.98	-12.80	PK
3	9648	43.11	74.00	-30.89	56.11	-13.00	PK

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Emission Level = Reading Level + Correct Factor.
3. Correct Factor = Antenna factor + Cable loss –Amplifier gain.
4. The average measurement was not performed when the peak measured data under the limit of average detection.
5. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product	:	IEEE802.11a/b/g/n 2.4+5GHz 1T1R Wi-Fi IoT Module
Test Item	:	Harmonic Radiated Emission Data
Test Mode	:	Mode 2: Transmit (802.11g 6Mbps) (2437MHz)
Test Date	:	2020/06/29

Horizontal



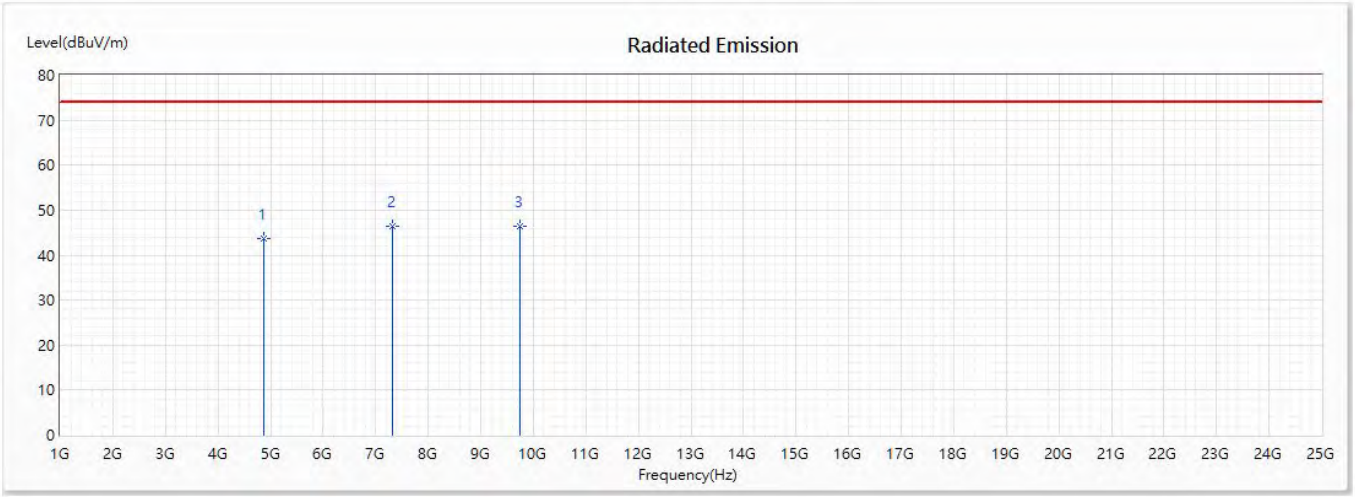
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
1	4874	44.91	74.00	-29.09	56.40	-11.49	PK
* 2	7311	47.81	74.00	-26.19	61.19	-13.38	PK
3	9748	43.35	74.00	-30.65	55.54	-12.19	PK

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Emission Level = Reading Level + Correct Factor.
3. Correct Factor = Antenna factor + Cable loss –Amplifier gain.
4. The average measurement was not performed when the peak measured data under the limit of average detection.
5. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product	:	IEEE802.11a/b/g/n 2.4+5GHz 1T1R Wi-Fi IoT Module
Test Item	:	Harmonic Radiated Emission Data
Test Mode	:	Mode 2: Transmit (802.11g 6Mbps) (2437MHz)
Test Date	:	2020/06/29

Vertical



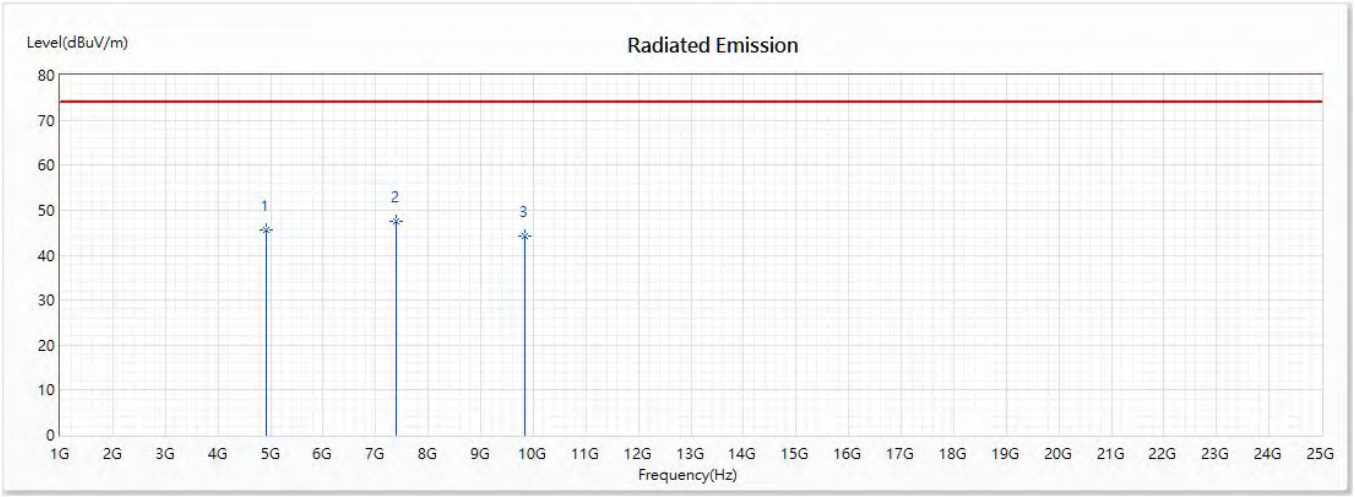
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
1	4874	43.55	74.00	-30.45	55.04	-11.49	PK
2	7311	46.47	74.00	-27.53	59.85	-13.38	PK
* 3	9748	46.52	74.00	-27.48	58.71	-12.19	PK

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Emission Level = Reading Level + Correct Factor.
3. Correct Factor = Antenna factor + Cable loss –Amplifier gain.
4. The average measurement was not performed when the peak measured data under the limit of average detection.
5. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product	:	IEEE802.11a/b/g/n 2.4+5GHz 1T1R Wi-Fi IoT Module
Test Item	:	Harmonic Radiated Emission Data
Test Mode	:	Mode 2: Transmit (802.11g 6Mbps) (2462MHz)
Test Date	:	2020/06/29

Horizontal



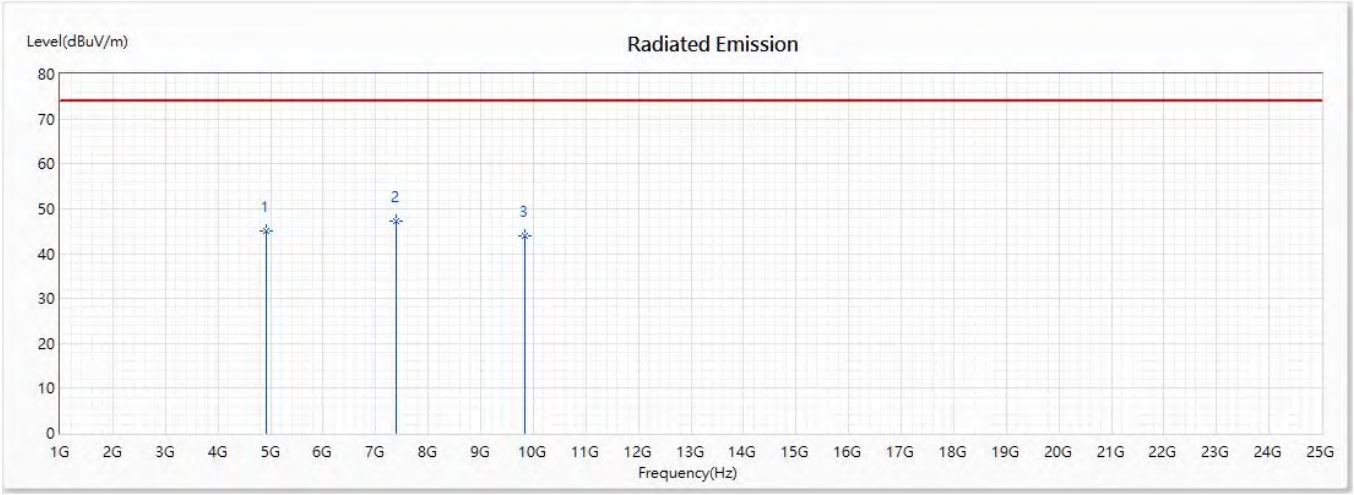
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
1	4924	45.59	74.00	-28.41	56.63	-11.04	PK
* 2	7386	47.62	74.00	-26.38	61.62	-14.00	PK
3	9848	44.11	74.00	-29.89	57.35	-13.24	PK

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Emission Level = Reading Level + Correct Factor.
3. Correct Factor = Antenna factor + Cable loss –Amplifier gain.
4. The average measurement was not performed when the peak measured data under the limit of average detection.
5. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product	:	IEEE802.11a/b/g/n 2.4+5GHz 1T1R Wi-Fi IoT Module
Test Item	:	Harmonic Radiated Emission Data
Test Mode	:	Mode 2: Transmit (802.11g 6Mbps) (2462MHz)
Test Date	:	2020/06/29

Vertical



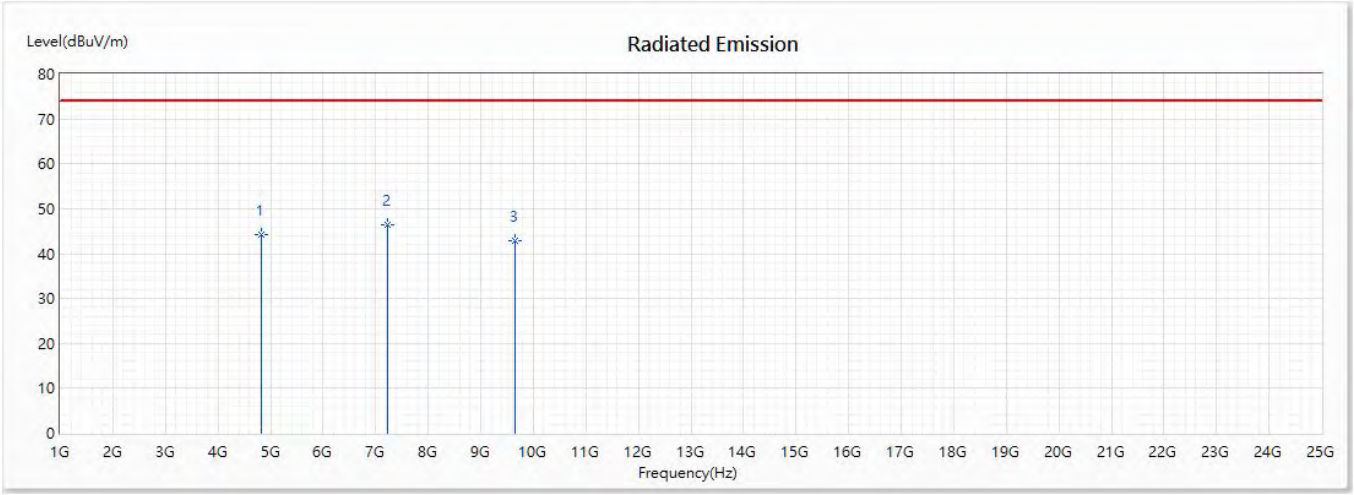
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
1	4924	45.13	74.00	-28.87	56.17	-11.04	PK
* 2	7386	47.13	74.00	-26.87	61.13	-14.00	PK
3	9848	44.07	74.00	-29.93	57.31	-13.24	PK

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Emission Level = Reading Level + Correct Factor.
3. Correct Factor = Antenna factor + Cable loss –Amplifier gain.
4. The average measurement was not performed when the peak measured data under the limit of average detection.
5. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product	:	IEEE802.11a/b/g/n 2.4+5GHz 1T1R Wi-Fi IoT Module
Test Item	:	Harmonic Radiated Emission Data
Test Mode	:	Mode 3: Transmit (802.11n MCS0 7.2Mbps 20M-BW) (2412MHz)
Test Date	:	2020/06/29

Horizontal



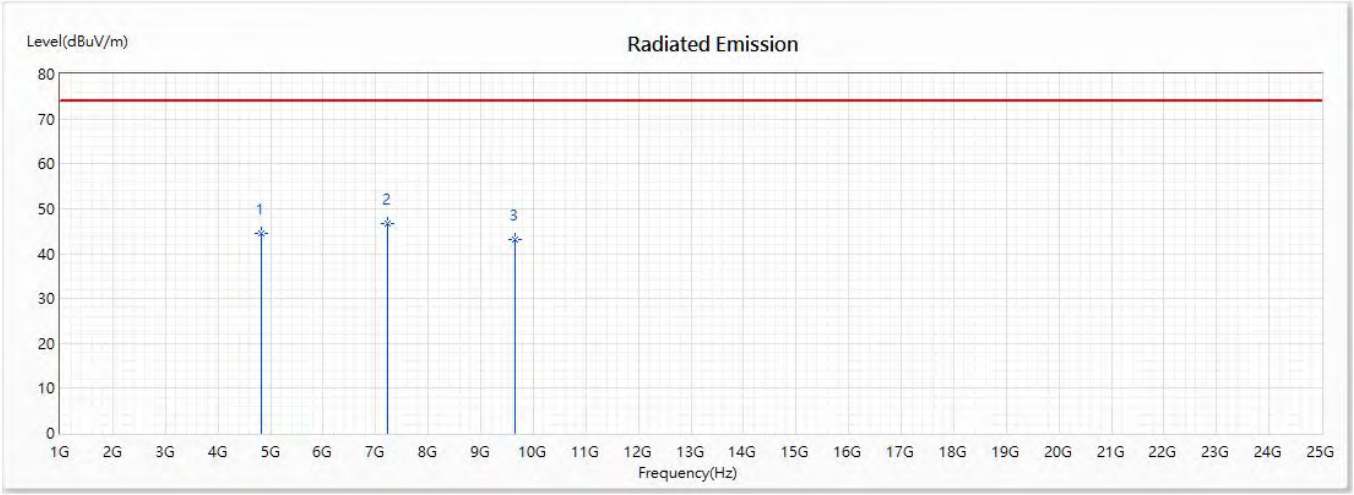
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
1	4824	44.35	74.00	-29.65	56.34	-11.99	PK
* 2	7236	46.37	74.00	-27.63	59.17	-12.80	PK
3	9648	42.85	74.00	-31.15	55.85	-13.00	PK

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Emission Level = Reading Level + Correct Factor.
3. Correct Factor = Antenna factor + Cable loss –Amplifier gain.
4. The average measurement was not performed when the peak measured data under the limit of average detection.
5. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product	:	IEEE802.11a/b/g/n 2.4+5GHz 1T1R Wi-Fi IoT Module
Test Item	:	Harmonic Radiated Emission Data
Test Mode	:	Mode 3: Transmit (802.11n MCS0 7.2Mbps 20M-BW) (2412MHz)
Test Date	:	2020/06/29

Vertical



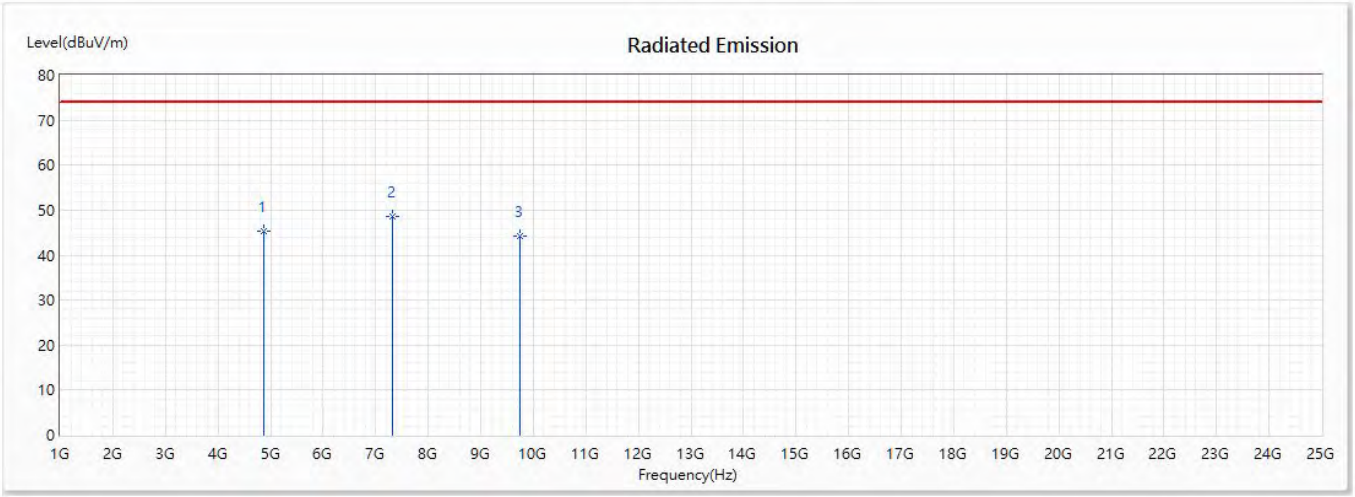
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
1	4824	44.62	74.00	-29.38	56.61	-11.99	PK
* 2	7236	46.65	74.00	-27.35	59.45	-12.80	PK
3	9648	43.25	74.00	-30.75	56.25	-13.00	PK

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Emission Level = Reading Level + Correct Factor.
3. Correct Factor = Antenna factor + Cable loss –Amplifier gain.
4. The average measurement was not performed when the peak measured data under the limit of average detection.
5. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product	:	IEEE802.11a/b/g/n 2.4+5GHz 1T1R Wi-Fi IoT Module
Test Item	:	Harmonic Radiated Emission Data
Test Mode	:	Mode 3: Transmit (802.11n MCS0 7.2Mbps 20M-BW) (2437MHz)
Test Date	:	2020/06/29

Horizontal



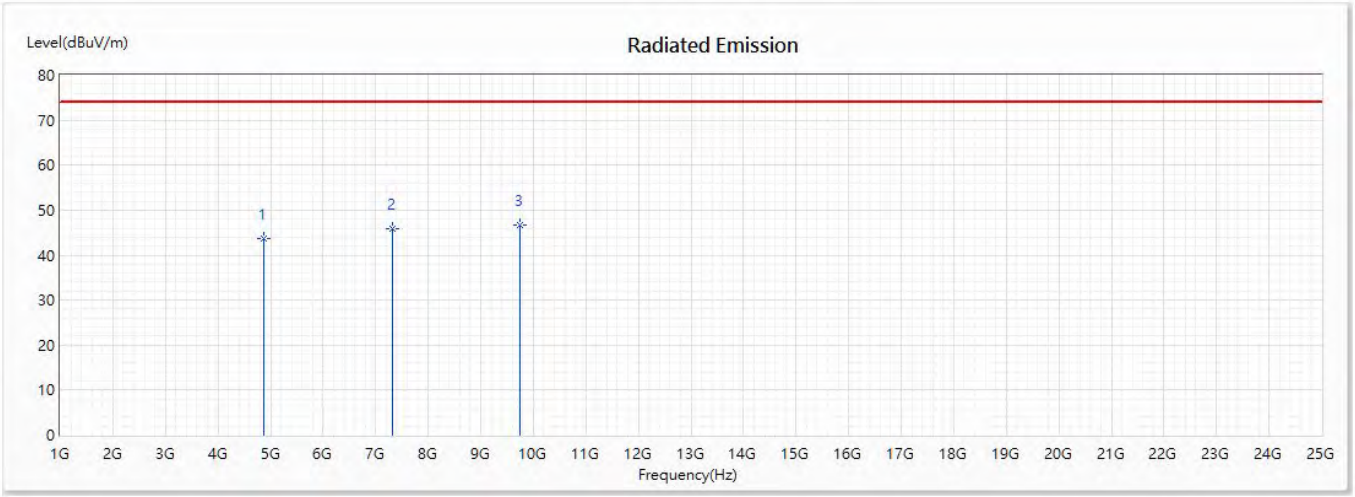
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
1	4874	45.39	74.00	-28.61	56.88	-11.49	PK
* 2	7311	48.55	74.00	-25.45	61.93	-13.38	PK
3	9748	44.11	74.00	-29.89	56.30	-12.19	PK

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Emission Level = Reading Level + Correct Factor.
3. Correct Factor = Antenna factor + Cable loss –Amplifier gain.
4. The average measurement was not performed when the peak measured data under the limit of average detection.
5. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product	:	IEEE802.11a/b/g/n 2.4+5GHz 1T1R Wi-Fi IoT Module
Test Item	:	Harmonic Radiated Emission Data
Test Mode	:	Mode 3: Transmit (802.11n MCS0 7.2Mbps 20M-BW) (2437MHz)
Test Date	:	2020/06/29

Vertical



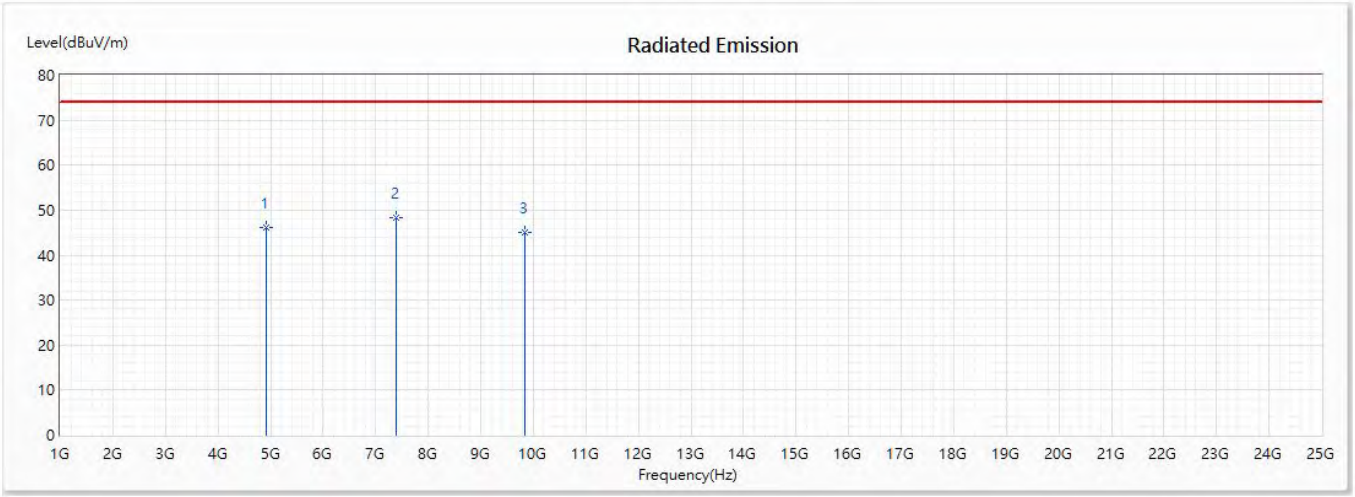
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
1	4874	43.78	74.00	-30.22	55.27	-11.49	PK
2	7311	45.99	74.00	-28.01	59.37	-13.38	PK
* 3	9748	46.68	74.00	-27.32	58.87	-12.19	PK

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Emission Level = Reading Level + Correct Factor.
3. Correct Factor = Antenna factor + Cable loss –Amplifier gain.
4. The average measurement was not performed when the peak measured data under the limit of average detection.
5. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : IEEE802.11a/b/g/n 2.4+5GHz 1T1R Wi-Fi IoT Module
Test Item : Harmonic Radiated Emission Data
Test Mode : Mode 3: Transmit (802.11n MCS0 7.2Mbps 20M-BW) (2462MHz)
Test Date : 2020/06/29

Horizontal



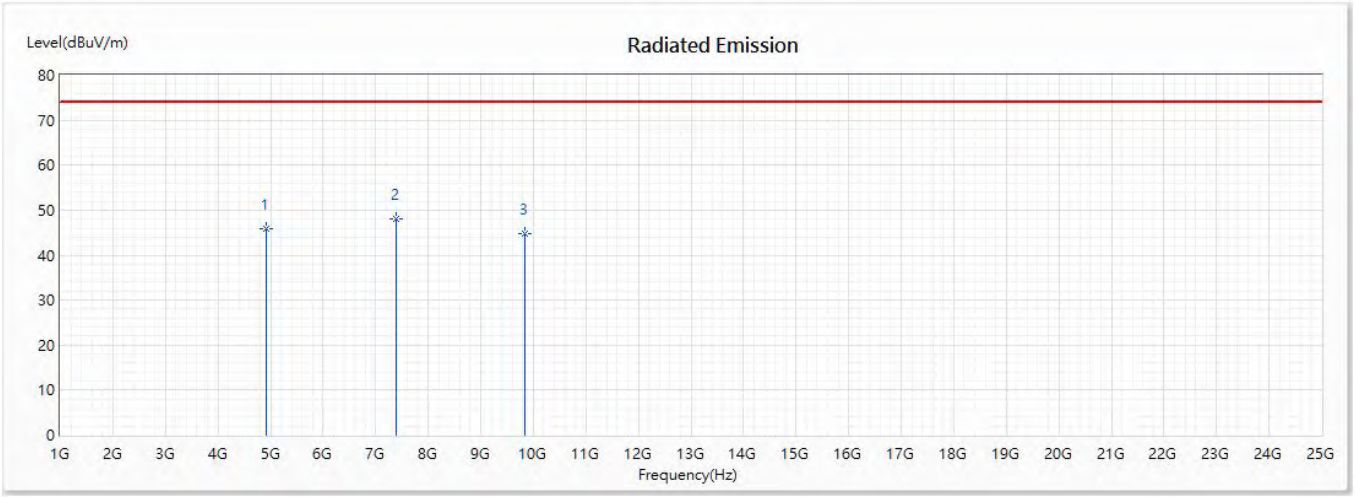
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
1	4924	46.23	74.00	-27.77	57.27	-11.04	PK
* 2	7386	48.31	74.00	-25.69	62.31	-14.00	PK
3	9848	44.93	74.00	-29.07	58.17	-13.24	PK

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Emission Level = Reading Level + Correct Factor.
3. Correct Factor = Antenna factor + Cable loss –Amplifier gain.
4. The average measurement was not performed when the peak measured data under the limit of average detection.
5. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : IEEE802.11a/b/g/n 2.4+5GHz 1T1R Wi-Fi IoT Module
Test Item : Harmonic Radiated Emission Data
Test Mode : Mode 3: Transmit (802.11n MCS0 7.2Mbps 20M-BW) (2462MHz)
Test Date : 2020/06/29

Vertical



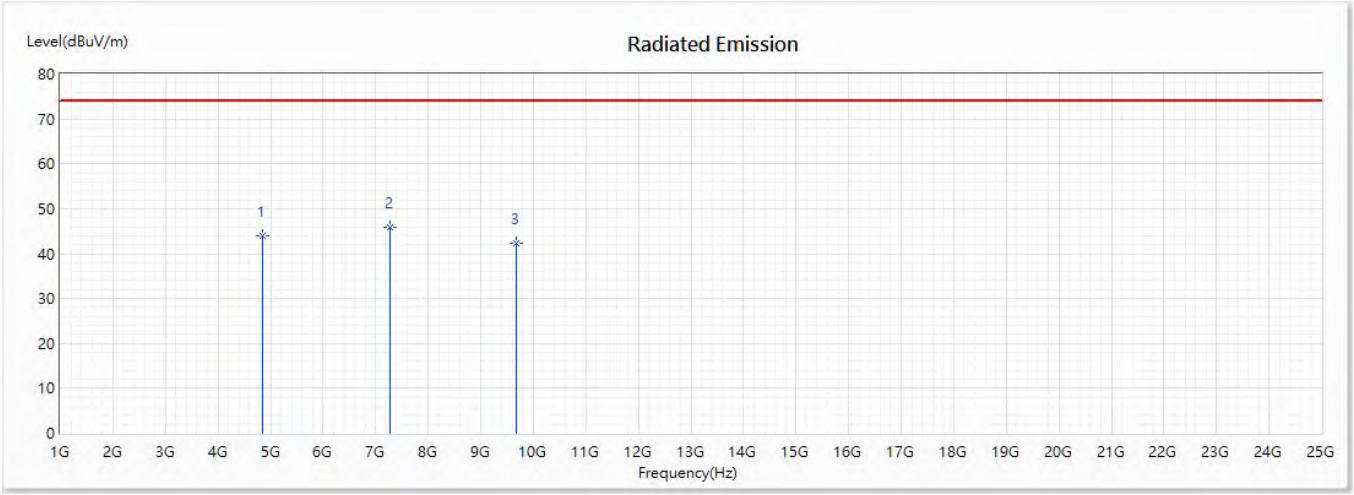
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
1	4924	45.87	74.00	-28.13	56.91	-11.04	PK
* 2	7386	47.92	74.00	-26.08	61.92	-14.00	PK
3	9848	44.82	74.00	-29.18	58.06	-13.24	PK

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Emission Level = Reading Level + Correct Factor.
3. Correct Factor = Antenna factor + Cable loss –Amplifier gain.
4. The average measurement was not performed when the peak measured data under the limit of average detection.
5. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : IEEE802.11a/b/g/n 2.4+5GHz 1T1R Wi-Fi IoT Module
Test Item : Harmonic Radiated Emission Data
Test Mode : Mode 4: Transmit (802.11n MCS0 15Mbps 40M-BW) (2422MHz)
Test Date : 2020/06/29

Horizontal



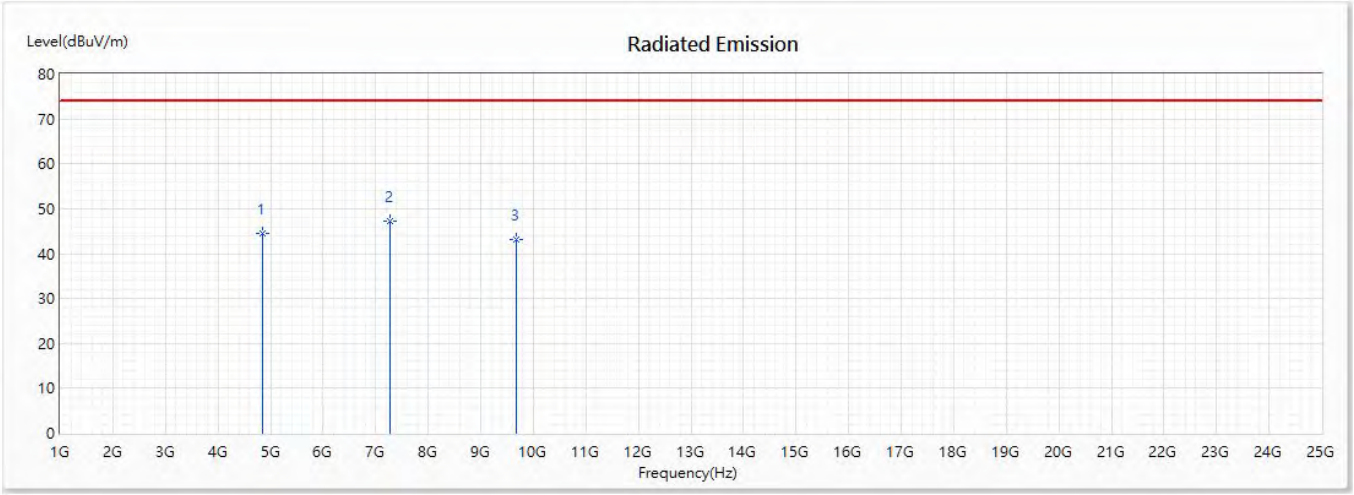
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
1	4844	43.95	74.00	-30.05	55.70	-11.75	PK
* 2	7266	45.81	74.00	-28.19	58.74	-12.93	PK
3	9688	42.33	74.00	-31.67	55.01	-12.68	PK

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Emission Level = Reading Level + Correct Factor.
3. Correct Factor = Antenna factor + Cable loss –Amplifier gain.
4. The average measurement was not performed when the peak measured data under the limit of average detection.
5. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : IEEE802.11a/b/g/n 2.4+5GHz 1T1R Wi-Fi IoT Module
Test Item : Harmonic Radiated Emission Data
Test Mode : Mode 4: Transmit (802.11n MCS0 15Mbps 40M-BW) (2422MHz)
Test Date : 2020/06/29

Vertical



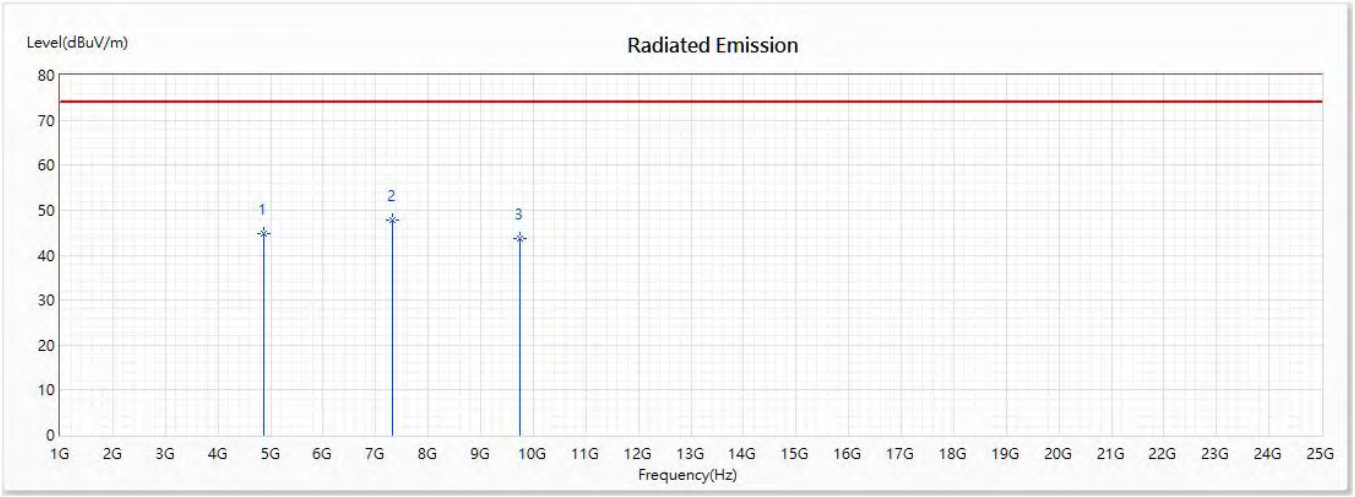
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
1	4844	44.38	74.00	-29.62	56.13	-11.75	PK
* 2	7266	47.35	74.00	-26.65	60.28	-12.93	PK
3	9688	43.27	74.00	-30.73	55.95	-12.68	PK

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Emission Level = Reading Level + Correct Factor.
3. Correct Factor = Antenna factor + Cable loss –Amplifier gain.
4. The average measurement was not performed when the peak measured data under the limit of average detection.
5. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product	:	IEEE802.11a/b/g/n 2.4+5GHz 1T1R Wi-Fi IoT Module
Test Item	:	Harmonic Radiated Emission Data
Test Mode	:	Mode 4: Transmit (802.11n MCS0 15Mbps 40M-BW) (2437MHz)
Test Date	:	2020/06/29

Horizontal



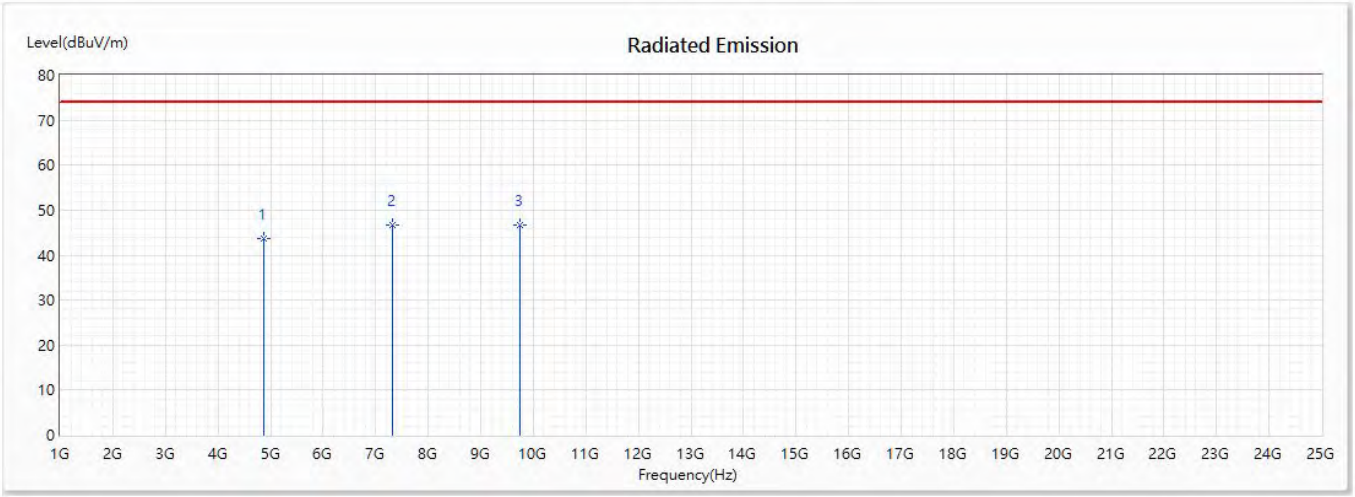
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
1	4874	44.82	74.00	-29.18	56.31	-11.49	PK
* 2	7311	47.75	74.00	-26.25	61.13	-13.38	PK
3	9748	43.73	74.00	-30.27	55.92	-12.19	PK

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Emission Level = Reading Level + Correct Factor.
3. Correct Factor = Antenna factor + Cable loss –Amplifier gain.
4. The average measurement was not performed when the peak measured data under the limit of average detection.
5. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product	:	IEEE802.11a/b/g/n 2.4+5GHz 1T1R Wi-Fi IoT Module
Test Item	:	Harmonic Radiated Emission Data
Test Mode	:	Mode 4: Transmit (802.11n MCS0 15Mbps 40M-BW) (2437MHz)
Test Date	:	2020/06/29

Vertical



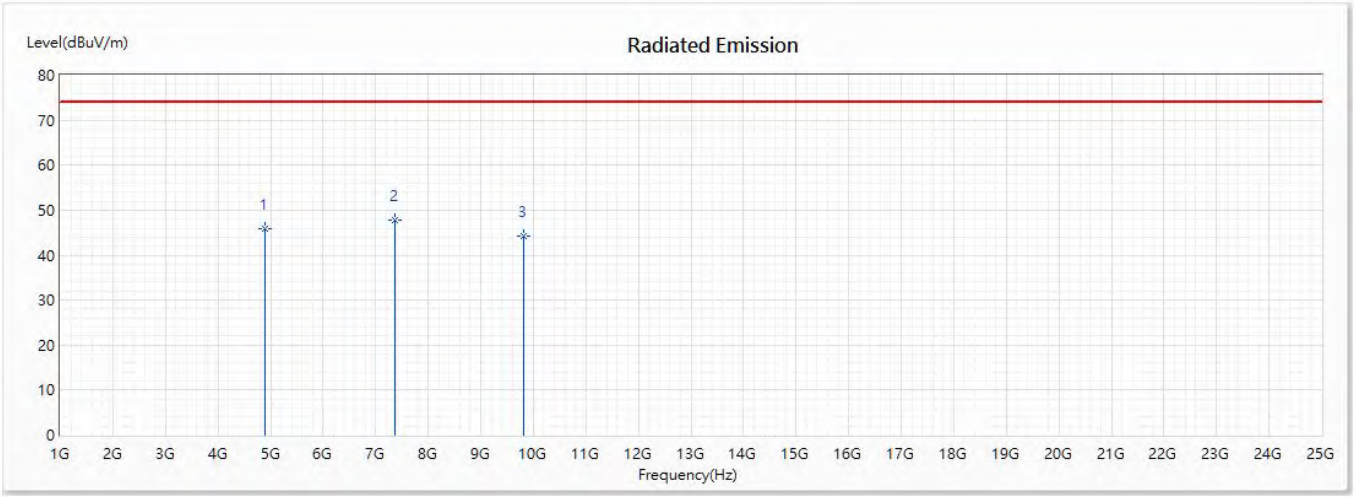
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
1	4874	43.66	74.00	-30.34	55.15	-11.49	PK
2	7311	46.62	74.00	-27.38	60.00	-13.38	PK
* 3	9748	46.77	74.00	-27.23	58.96	-12.19	PK

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Emission Level = Reading Level + Correct Factor.
3. Correct Factor = Antenna factor + Cable loss –Amplifier gain.
4. The average measurement was not performed when the peak measured data under the limit of average detection.
5. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product	:	IEEE802.11a/b/g/n 2.4+5GHz 1T1R Wi-Fi IoT Module
Test Item	:	Harmonic Radiated Emission Data
Test Mode	:	Mode 4: Transmit (802.11n MCS0 15Mbps 40M-BW) (2452MHz)
Test Date	:	2020/06/29

Horizontal



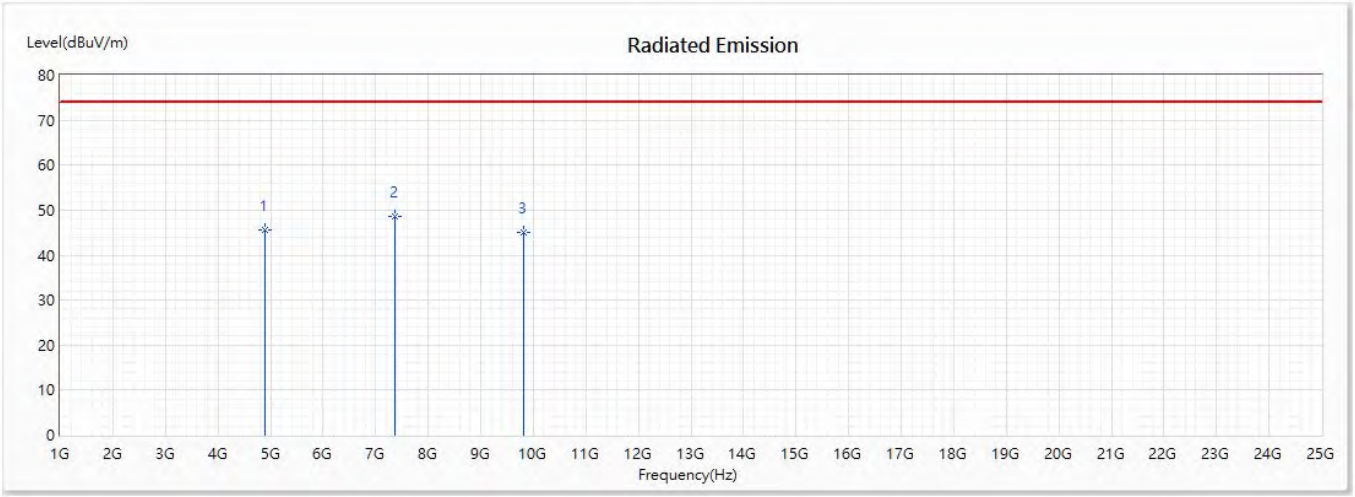
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
1	4904	45.95	74.00	-28.05	57.19	-11.24	PK
* 2	7356	47.83	74.00	-26.17	61.57	-13.74	PK
3	9808	44.23	74.00	-29.77	57.03	-12.80	PK

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Emission Level = Reading Level + Correct Factor.
3. Correct Factor = Antenna factor + Cable loss –Amplifier gain.
4. The average measurement was not performed when the peak measured data under the limit of average detection.
5. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product	:	IEEE802.11a/b/g/n 2.4+5GHz 1T1R Wi-Fi IoT Module
Test Item	:	Harmonic Radiated Emission Data
Test Mode	:	Mode 4: Transmit (802.11n MCS0 15Mbps 40M-BW) (2452MHz)
Test Date	:	2020/06/29

Vertical



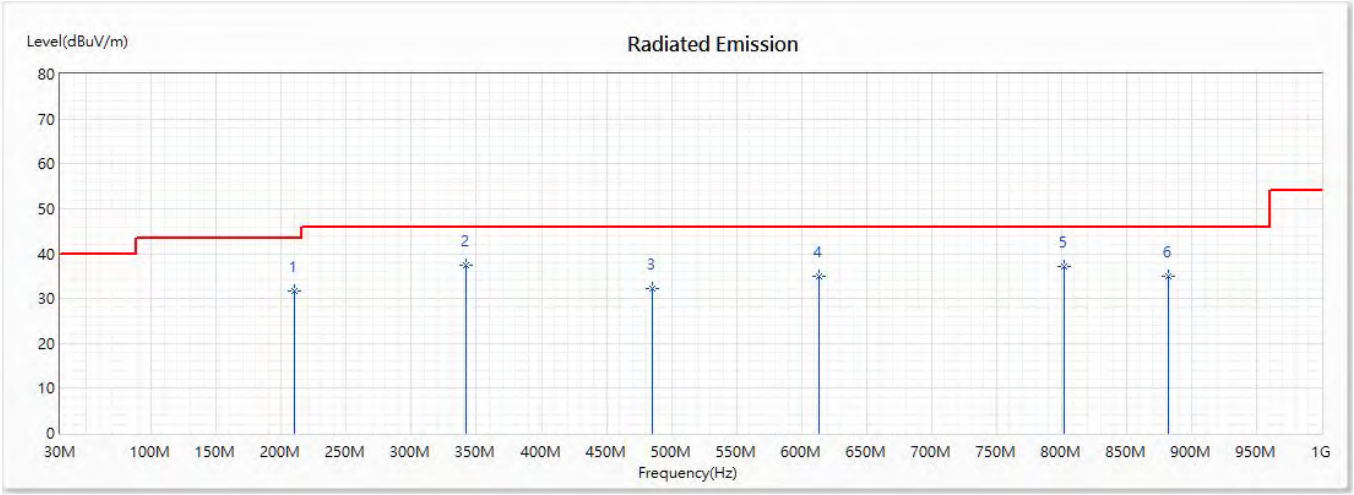
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
1	4904	45.56	74.00	-28.44	56.80	-11.24	PK
* 2	7356	48.55	74.00	-25.45	62.29	-13.74	PK
3	9808	44.97	74.00	-29.03	57.77	-12.80	PK

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Emission Level = Reading Level + Correct Factor.
3. Correct Factor = Antenna factor + Cable loss –Amplifier gain.
4. The average measurement was not performed when the peak measured data under the limit of average detection.
5. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product	:	IEEE802.11a/b/g/n 2.4+5GHz 1T1R Wi-Fi IoT Module
Test Item	:	General Radiated Emission Data
Test Mode	:	Mode 1: Transmit (802.11b 1Mbps)(2437MHz)
Test Date	:	2020/06/29

Horizontal



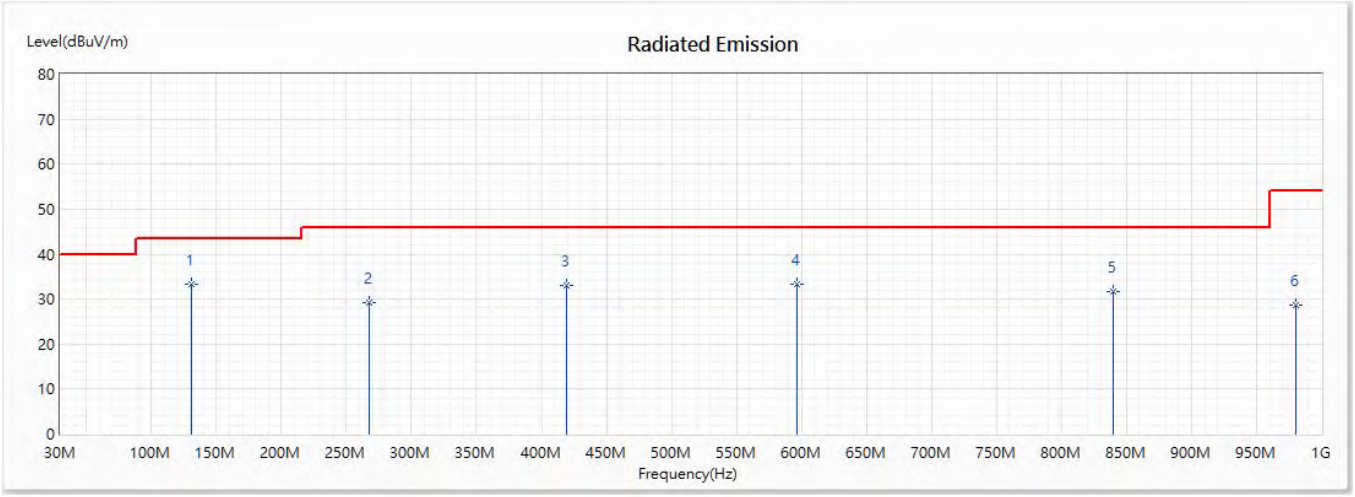
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
1	209.942	31.70	43.50	-11.80	43.47	-11.77	QP
* 2	342.087	37.36	46.00	-8.64	44.88	-7.52	QP
3	485.478	32.21	46.00	-13.79	37.57	-5.36	QP
4	613.406	35.06	46.00	-10.94	36.27	-1.21	QP
5	801.783	37.25	46.00	-8.75	39.96	-2.71	QP
6	881.913	34.93	46.00	-11.07	37.17	-2.24	QP

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Emission Level = Reading Level + Correct Factor.
3. Correct Factor = Antenna factor + Cable loss –Amplifier gain.
4. The emission levels of other frequencies are very lower than the limit and not show in test report.
5. No emission found between lowest internal used/generated frequency to 30MHz.

Product	:	IEEE802.11a/b/g/n 2.4+5GHz 1T1R Wi-Fi IoT Module
Test Item	:	General Radiated Emission Data
Test Mode	:	Mode 1: Transmit (802.11b 1Mbps)(2437MHz)
Test Date	:	2020/06/29

Vertical



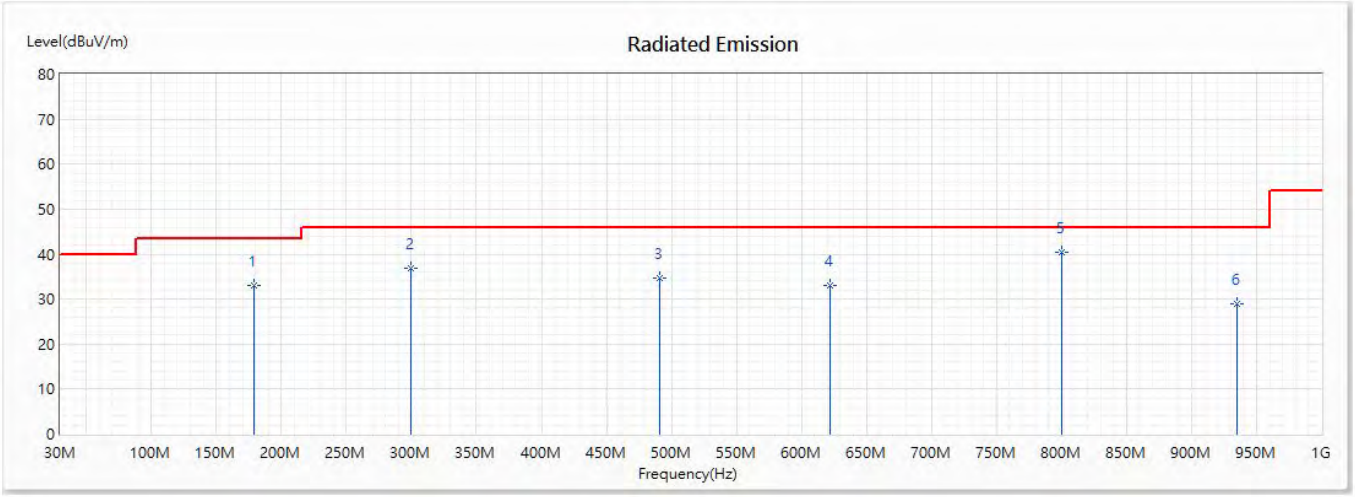
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
* 1	131.217	33.35	43.50	-10.15	42.88	-9.53	QP
2	267.58	29.11	46.00	-16.89	41.42	-12.31	QP
3	419.406	33.16	46.00	-12.84	38.60	-5.44	QP
4	596.536	33.37	46.00	-12.63	33.68	-0.31	QP
5	839.739	31.74	46.00	-14.26	33.92	-2.18	QP
6	980.319	28.71	54.00	-25.29	30.29	-1.58	QP

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Emission Level = Reading Level + Correct Factor.
3. Correct Factor = Antenna factor + Cable loss –Amplifier gain.
4. The emission levels of other frequencies are very lower than the limit and not show in test report.
5. No emission found between lowest internal used/generated frequency to 30MHz.

Product	:	IEEE802.11a/b/g/n 2.4+5GHz 1T1R Wi-Fi IoT Module
Test Item	:	General Radiated Emission Data
Test Mode	:	Mode 2: Transmit (802.11g 6Mbps)(2437MHz)
Test Date	:	2020/06/29

Horizontal



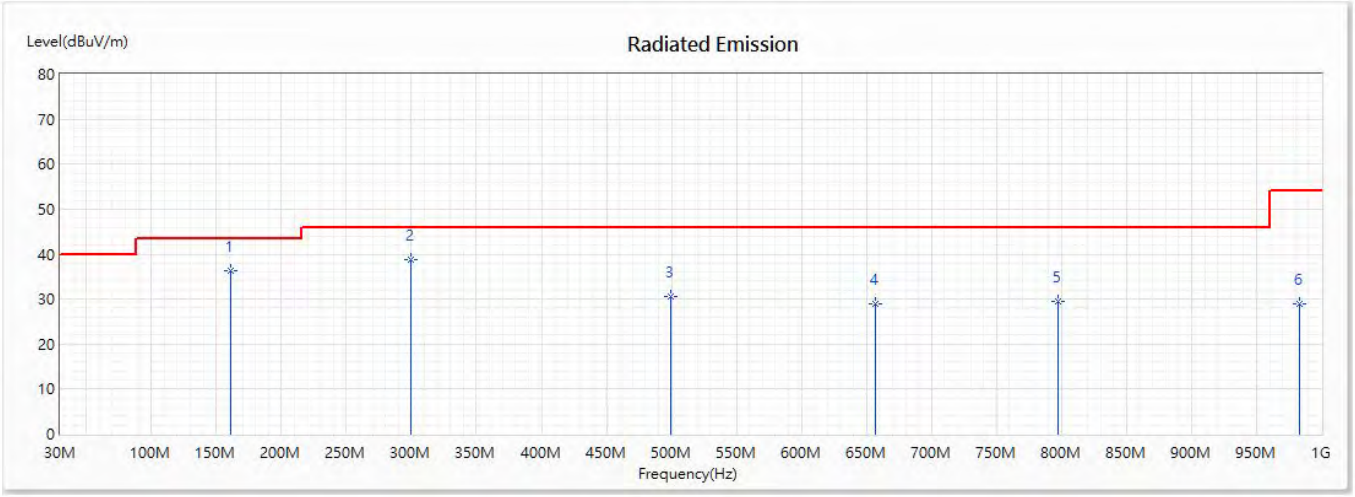
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
1	179.014	33.04	43.50	-10.46	45.99	-12.95	QP
2	299.913	36.89	46.00	-9.11	45.10	-8.21	QP
3	491.101	34.55	46.00	-11.45	39.56	-5.01	QP
4	621.841	33.12	46.00	-12.88	34.94	-1.82	QP
* 5	800.377	40.49	46.00	-5.51	43.19	-2.70	QP
6	935.333	29.06	46.00	-16.94	31.69	-2.63	QP

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Emission Level = Reading Level + Correct Factor.
3. Correct Factor = Antenna factor + Cable loss –Amplifier gain.
4. The emission levels of other frequencies are very lower than the limit and not show in test report.
5. No emission found between lowest internal used/generated frequency to 30MHz.

Product	:	IEEE802.11a/b/g/n 2.4+5GHz 1T1R Wi-Fi IoT Module
Test Item	:	General Radiated Emission Data
Test Mode	:	Mode 2: Transmit (802.11g 6Mbps)(2437MHz)
Test Date	:	2020/06/29

Vertical



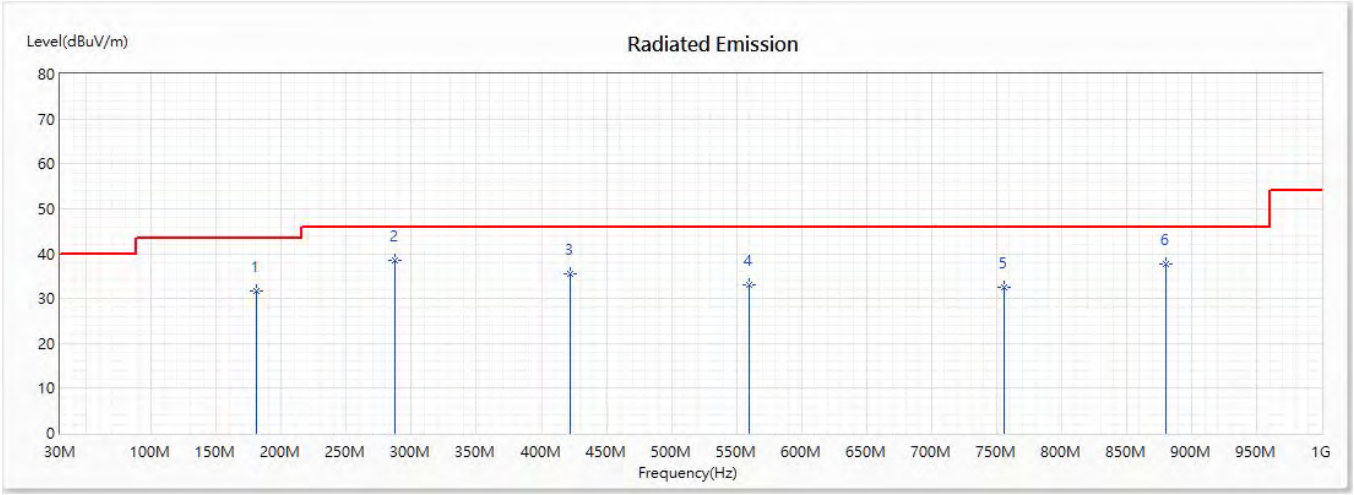
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
* 1	160.739	36.23	43.50	-7.27	50.08	-13.85	QP
2	299.913	38.64	46.00	-7.36	46.85	-8.21	QP
3	499.536	30.46	46.00	-15.54	34.95	-4.49	QP
4	656.986	29.02	46.00	-16.98	32.71	-3.69	QP
5	797.565	29.58	46.00	-16.42	32.23	-2.65	QP
6	983.13	28.87	54.00	-25.13	30.49	-1.62	QP

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Emission Level = Reading Level + Correct Factor.
3. Correct Factor = Antenna factor + Cable loss –Amplifier gain.
4. The emission levels of other frequencies are very lower than the limit and not show in test report.
5. No emission found between lowest internal used/generated frequency to 30MHz.

Product	:	IEEE802.11a/b/g/n 2.4+5GHz 1T1R Wi-Fi IoT Module
Test Item	:	General Radiated Emission Data
Test Mode	:	Mode 3: Transmit (802.11n MCS0 7.2Mbps 20M-BW)(2437MHz)
Test Date	:	2020/06/29

Horizontal



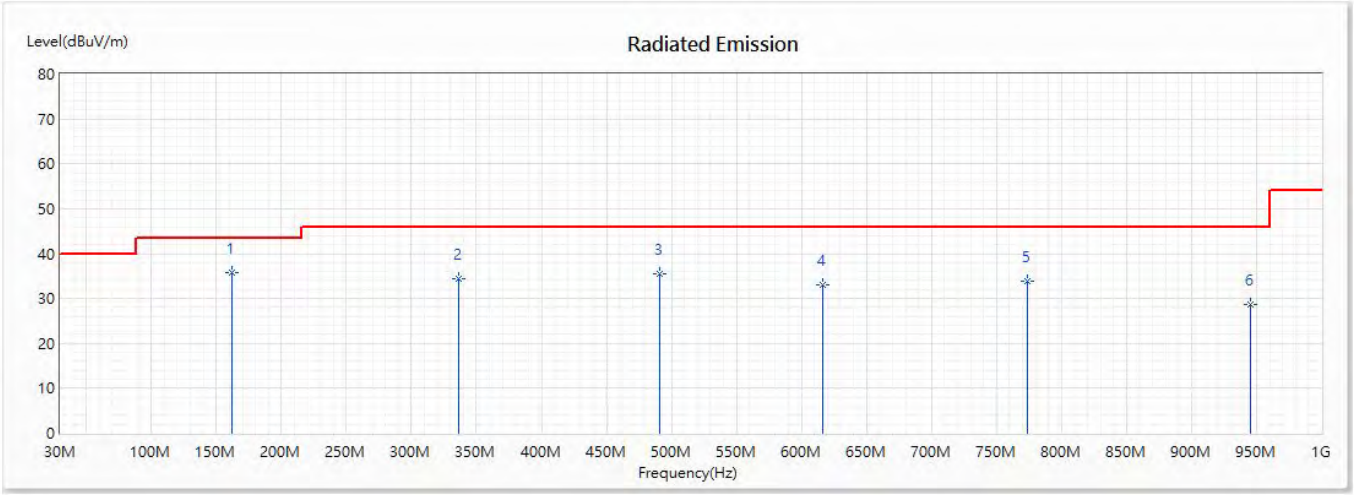
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
1	180.42	31.66	43.50	-11.84	44.51	-12.85	QP
* 2	287.261	38.62	46.00	-7.38	49.64	-11.02	QP
3	422.217	35.40	46.00	-10.60	40.57	-5.17	QP
4	559.986	33.06	46.00	-12.94	37.03	-3.97	QP
5	755.391	32.37	46.00	-13.63	33.45	-1.08	QP
6	880.507	37.69	46.00	-8.31	39.83	-2.14	QP

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Emission Level = Reading Level + Correct Factor.
3. Correct Factor = Antenna factor + Cable loss –Amplifier gain.
4. The emission levels of other frequencies are very lower than the limit and not show in test report.
5. No emission found between lowest internal used/generated frequency to 30MHz.

Product	:	IEEE802.11a/b/g/n 2.4+5GHz 1T1R Wi-Fi IoT Module
Test Item	:	General Radiated Emission Data
Test Mode	:	Mode 3: Transmit (802.11n MCS0 7.2Mbps 20M-BW)(2437MHz)
Test Date	:	2020/06/29

Vertical



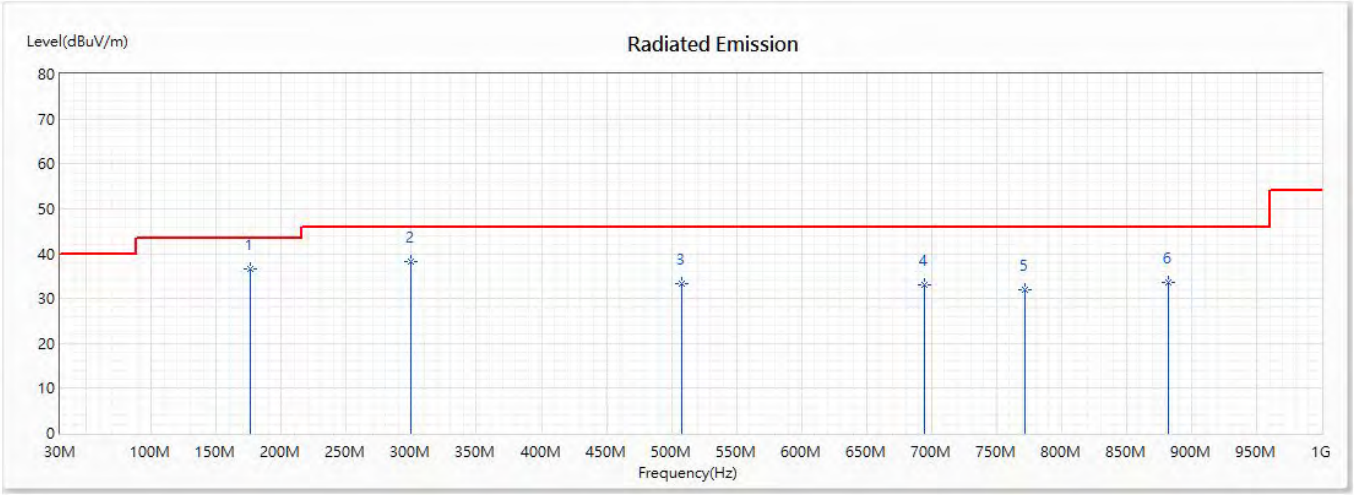
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
* 1	162.145	35.88	43.50	-7.62	49.69	-13.81	QP
2	336.464	34.30	46.00	-11.70	41.99	-7.69	QP
3	491.101	35.52	46.00	-10.48	40.53	-5.01	QP
4	616.217	32.92	46.00	-13.08	34.35	-1.43	QP
5	773.667	33.99	46.00	-12.01	36.10	-2.11	QP
6	945.174	28.76	46.00	-17.24	30.94	-2.18	QP

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Emission Level = Reading Level + Correct Factor.
3. Correct Factor = Antenna factor + Cable loss –Amplifier gain.
4. The emission levels of other frequencies are very lower than the limit and not show in test report.
5. No emission found between lowest internal used/generated frequency to 30MHz.

Product	:	IEEE802.11a/b/g/n 2.4+5GHz 1T1R Wi-Fi IoT Module
Test Item	:	General Radiated Emission Data
Test Mode	:	Mode 4: Transmit (802.11n MCS0 15Mbps 40M-BW)(2437MHz)
Test Date	:	2020/06/29

Horizontal



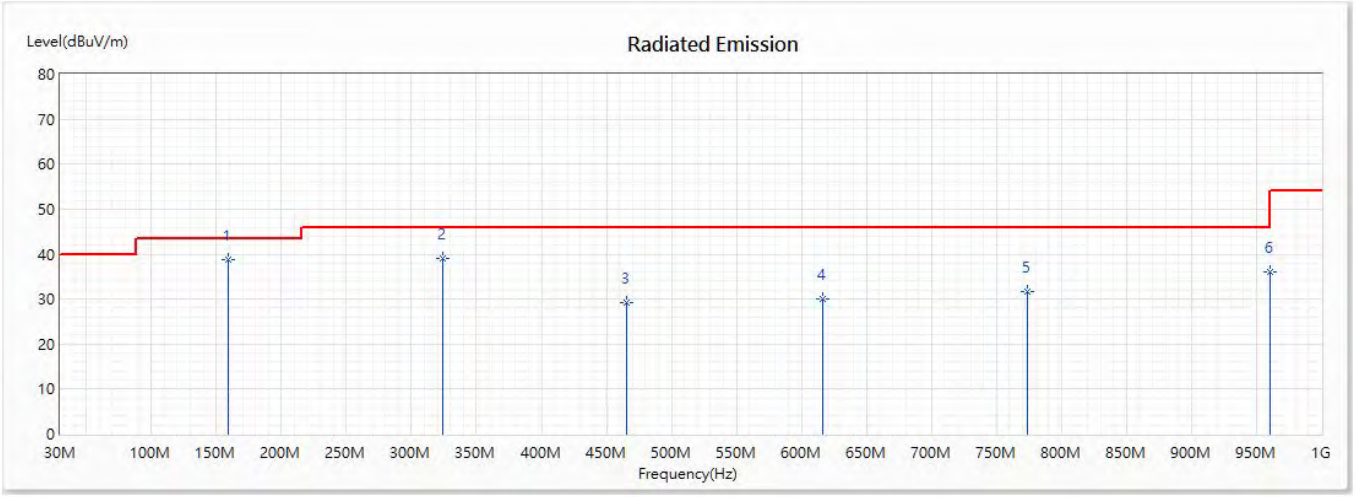
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
* 1	176.203	36.68	43.50	-6.82	49.82	-13.14	QP
2	299.913	38.30	46.00	-7.70	46.51	-8.21	QP
3	507.971	33.40	46.00	-12.60	37.99	-4.59	QP
4	694.942	33.01	46.00	-12.99	36.06	-3.05	QP
5	772.261	32.03	46.00	-13.97	34.08	-2.05	QP
6	881.913	33.70	46.00	-12.30	35.94	-2.24	QP

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Emission Level = Reading Level + Correct Factor.
3. Correct Factor = Antenna factor + Cable loss –Amplifier gain.
4. The emission levels of other frequencies are very lower than the limit and not show in test report.
5. No emission found between lowest internal used/generated frequency to 30MHz.

Product	:	IEEE802.11a/b/g/n 2.4+5GHz 1T1R Wi-Fi IoT Module
Test Item	:	General Radiated Emission Data
Test Mode	:	Mode 4: Transmit (802.11n MCS0 15Mbps 40M-BW)(2437MHz)
Test Date	:	2020/06/29

Vertical



No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
* 1	159.333	38.78	43.50	-4.72	52.61	-13.83	QP
2	323.812	38.93	46.00	-7.07	46.66	-7.73	QP
3	465.797	29.16	46.00	-16.84	33.75	-4.59	QP
4	616.217	30.14	46.00	-15.86	31.57	-1.43	QP
5	773.667	31.77	46.00	-14.23	33.88	-2.11	QP
6	960.638	35.98	54.00	-18.02	38.11	-2.13	QP

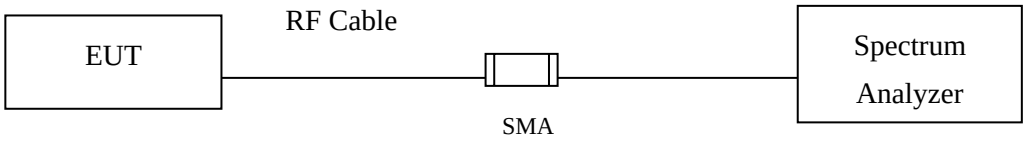
Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Emission Level = Reading Level + Correct Factor.
3. Correct Factor = Antenna factor + Cable loss –Amplifier gain.
4. The emission levels of other frequencies are very lower than the limit and not show in test report.
5. No emission found between lowest internal used/generated frequency to 30MHz.

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

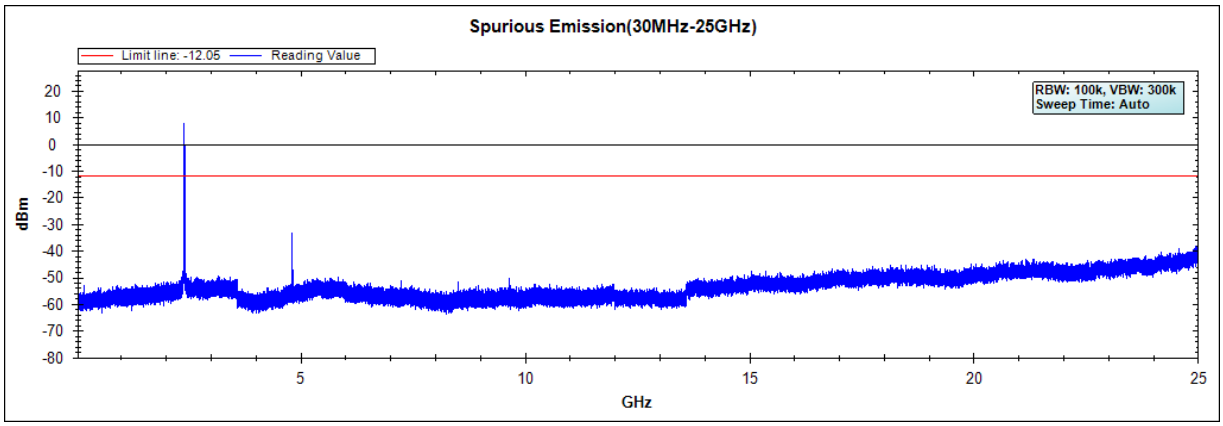
The EUT was tested according to C63.10:2013 Section 11.11 for compliance to FCC 47CFR 15.247 requirements.

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

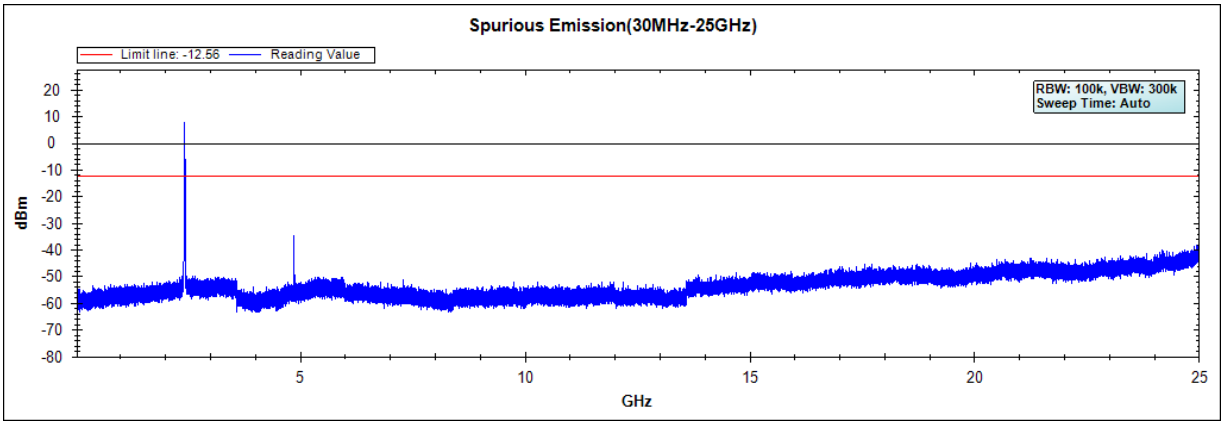
5.4. Test Result of RF antenna conducted test

Product	:	IEEE802.11a/b/g/n 2.4+5GHz 1T1R Wi-Fi IoT Module
Test Item	:	RF antenna conducted test
Test Mode	:	Mode 1: Transmit (802.11b 1Mbps)
Test Date	:	2020/06/12

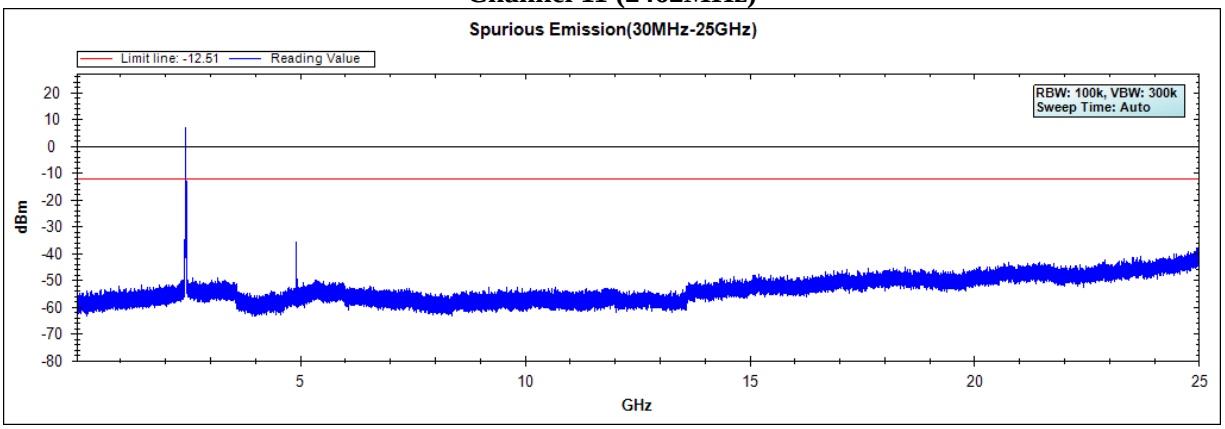
Channel 01 (2412MHz)



Channel 06 (2437MHz)



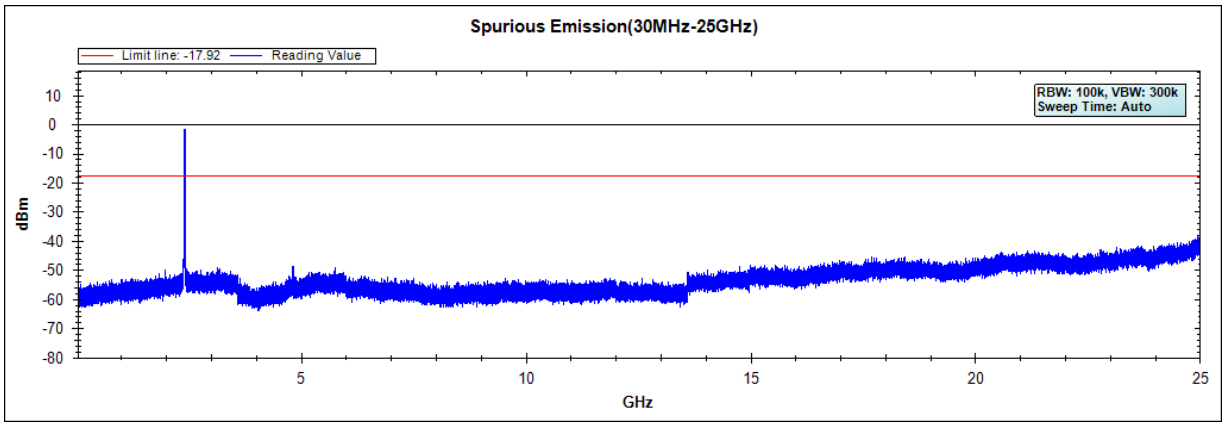
Channel 11 (2462MHz)



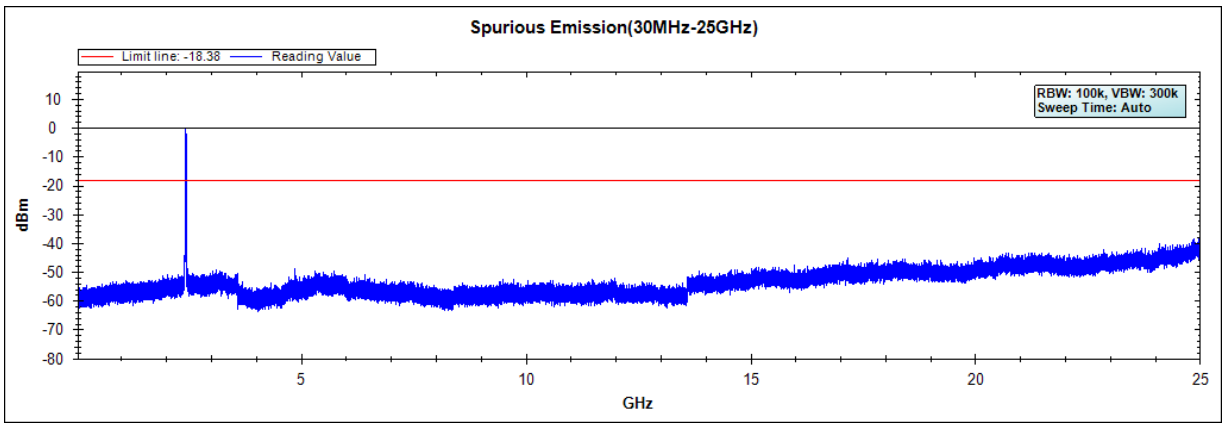
Note: The above test pattern is synthesized by multiple of the frequency range.

Product	:	IEEE802.11a/b/g/n 2.4+5GHz 1T1R Wi-Fi IoT Module
Test Item	:	RF Antenna Conducted Spurious
Test Mode	:	Mode 2: Transmit (802.11g 6Mbps)
Test Date	:	2020/06/12

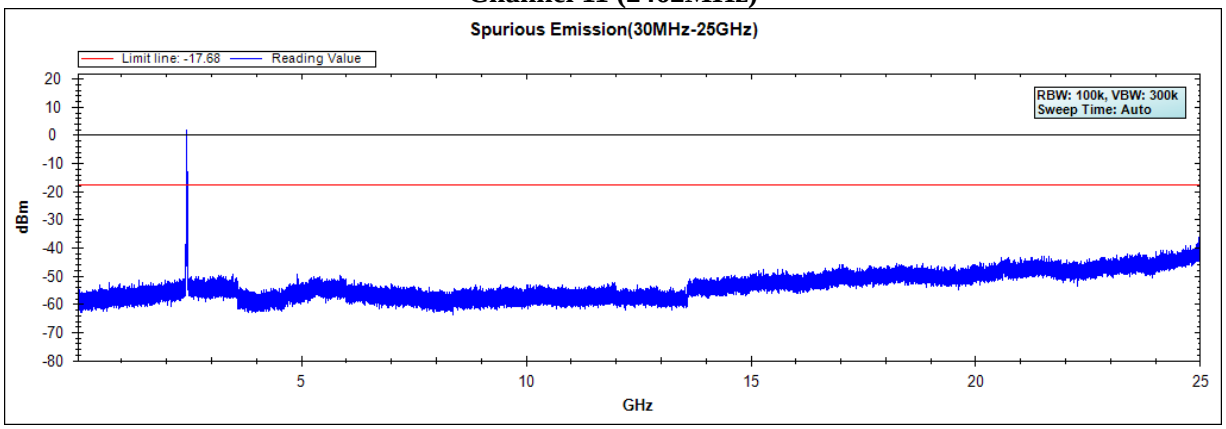
Channel 01 (2412MHz)



Channel 06 (2437MHz)



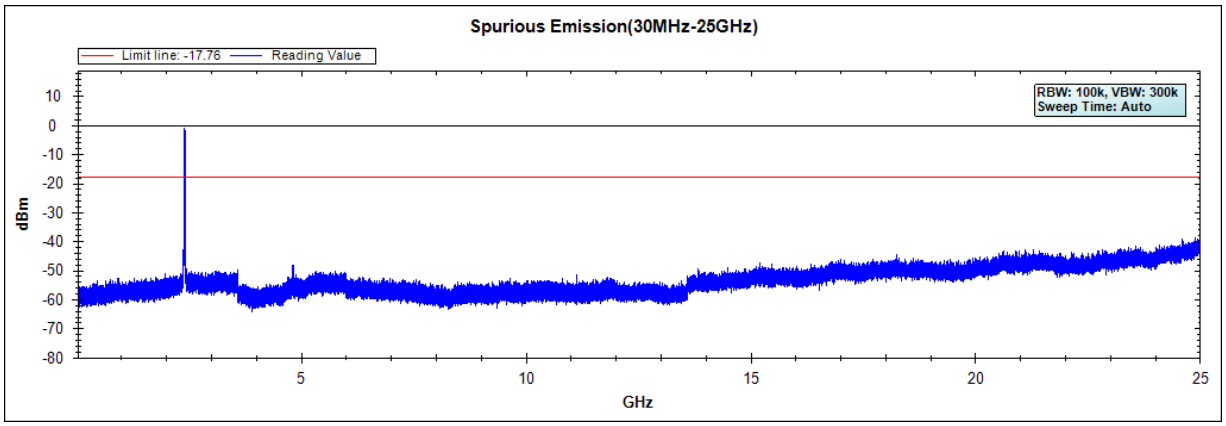
Channel 11 (2462MHz)



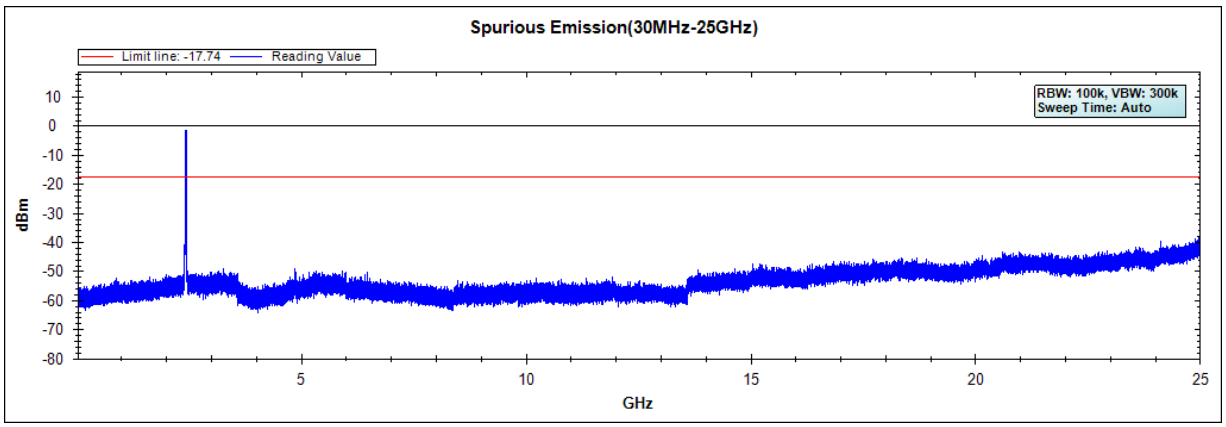
Note: The above test pattern is synthesized by multiple of the frequency range.

Product	:	IEEE802.11a/b/g/n 2.4+5GHz 1T1R Wi-Fi IoT Module
Test Item	:	RF Antenna Conducted Spurious
Test Mode	:	Mode 3: Transmit (802.11n MCS0 7.2Mbps 20M-BW)
Test Date	:	2020/06/12

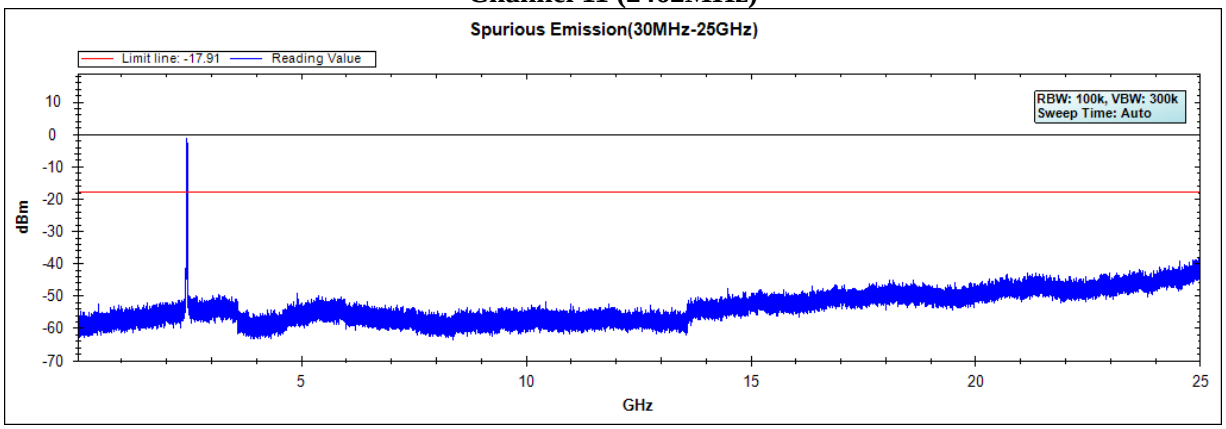
Channel 01 (2412MHz)



Channel 06 (2437MHz)



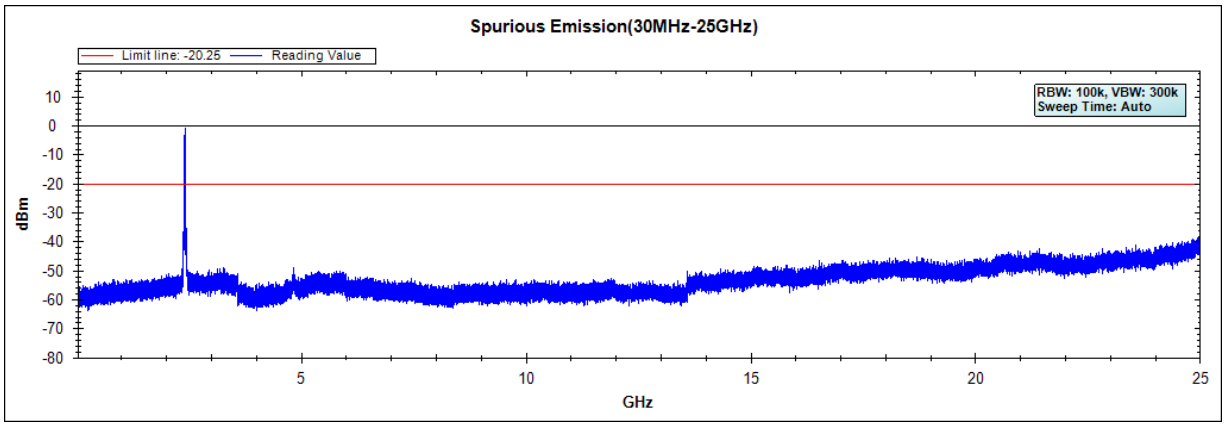
Channel 11 (2462MHz)



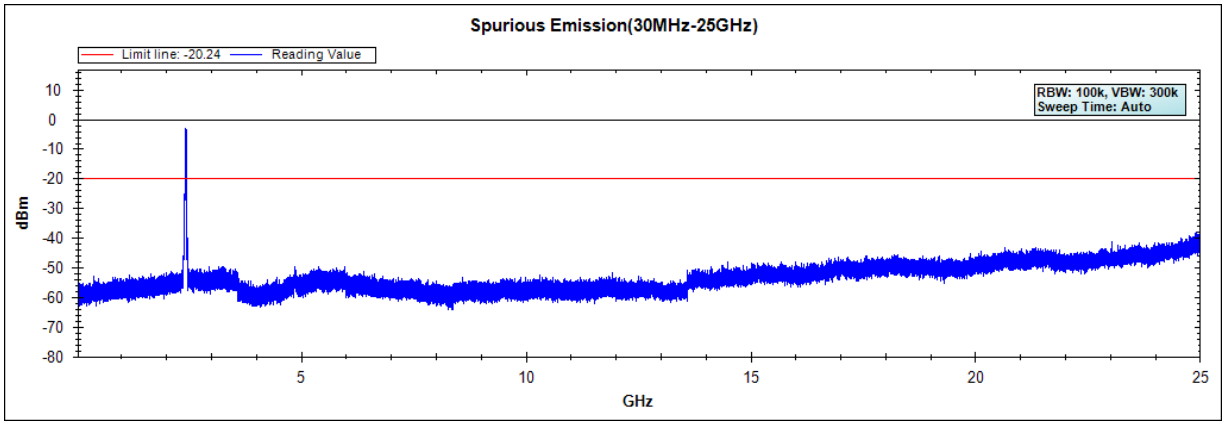
Note: The above test pattern is synthesized by multiple of the frequency range.

Product	:	IEEE802.11a/b/g/n 2.4+5GHz 1T1R Wi-Fi IoT Module
Test Item	:	RF Antenna Conducted Spurious
Test Mode	:	Mode 4: Transmit (802.11n MCS0 15Mbps 40M-BW)
Test Date	:	2020/06/12

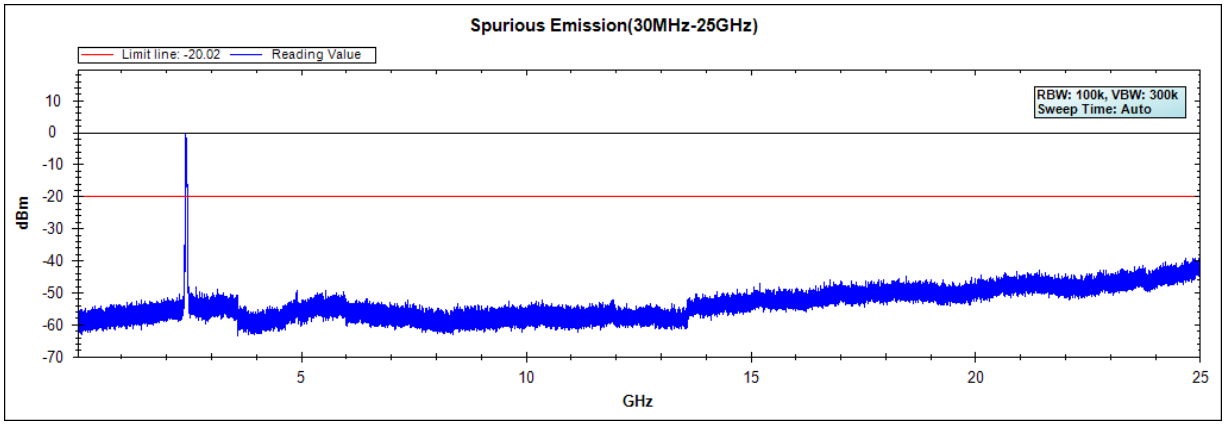
Channel 03 (2422MHz)



Channel 06 (2437MHz)



Channel 09 (2452MHz)

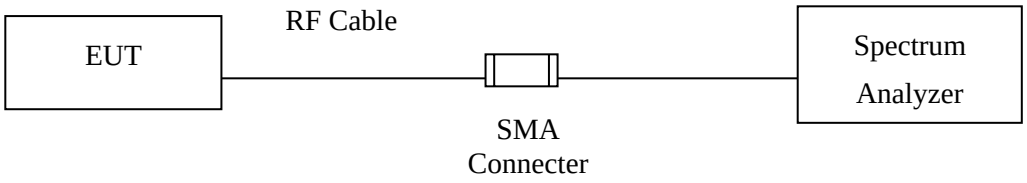


Note: The above test pattern is synthesized by multiple of the frequency range.

6. Band Edge

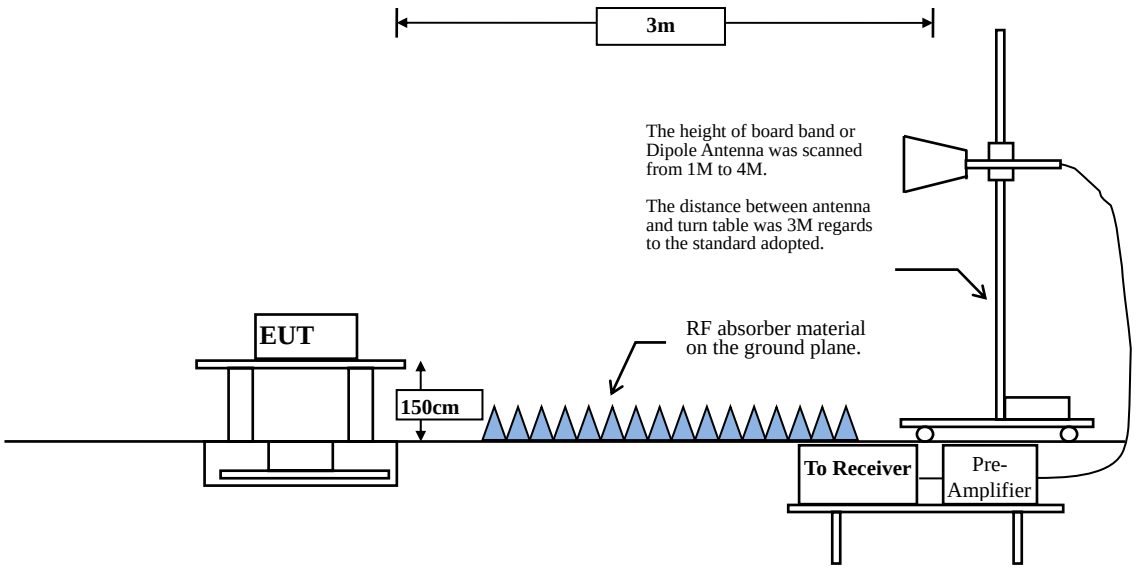
6.1. Test Setup

RF Conducted Measurement



RF Radiated Measurement:

Above 1GHz



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 = 1MHz.

VBW = 10Hz, 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.)

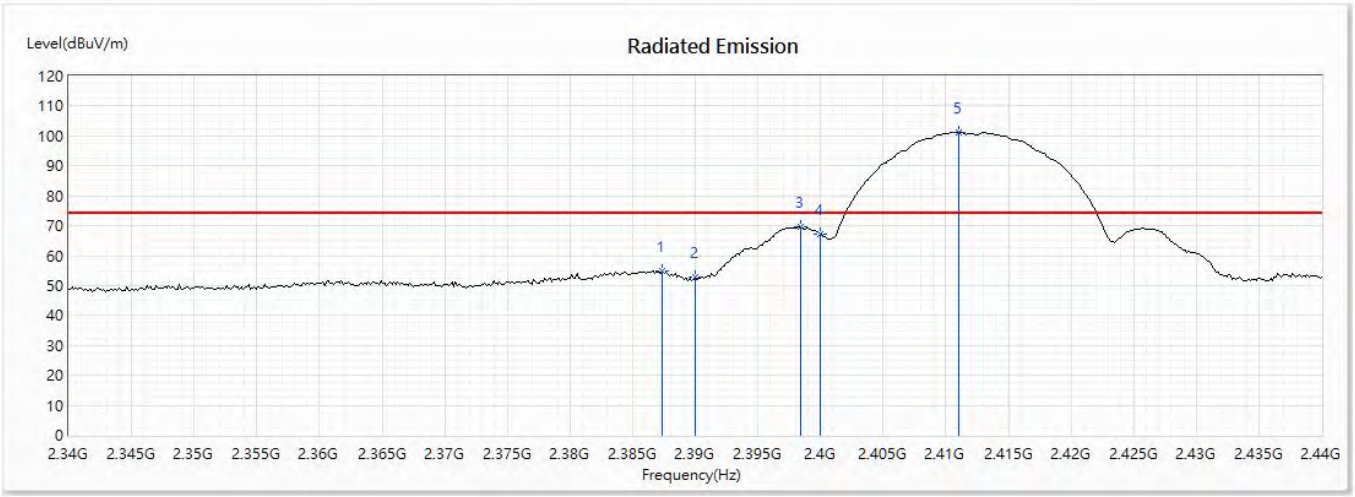
2.4GHz band	Duty Cycle (%)	T (ms)	1/T (Hz)	VBW (Hz)
802.11b	100.00	1.0000	1000	10
802.11g	97.43	1.3739	728	1000
802.11n20	99.60	5.0826	197	10
802.11n40	97.96	2.4348	411	500

Note: Duty Cycle Refer to Section 9.

6.4. Test Result of Band Edge

Product	:	IEEE802.11a/b/g/n 2.4+5GHz 1T1R Wi-Fi IoT Module
Test Item	:	Band Edge Data
Test Mode	:	Mode 1: Transmit (802.11b 1Mbps) (2412MHz)
Test Date	:	2020/06/24

Horizontal



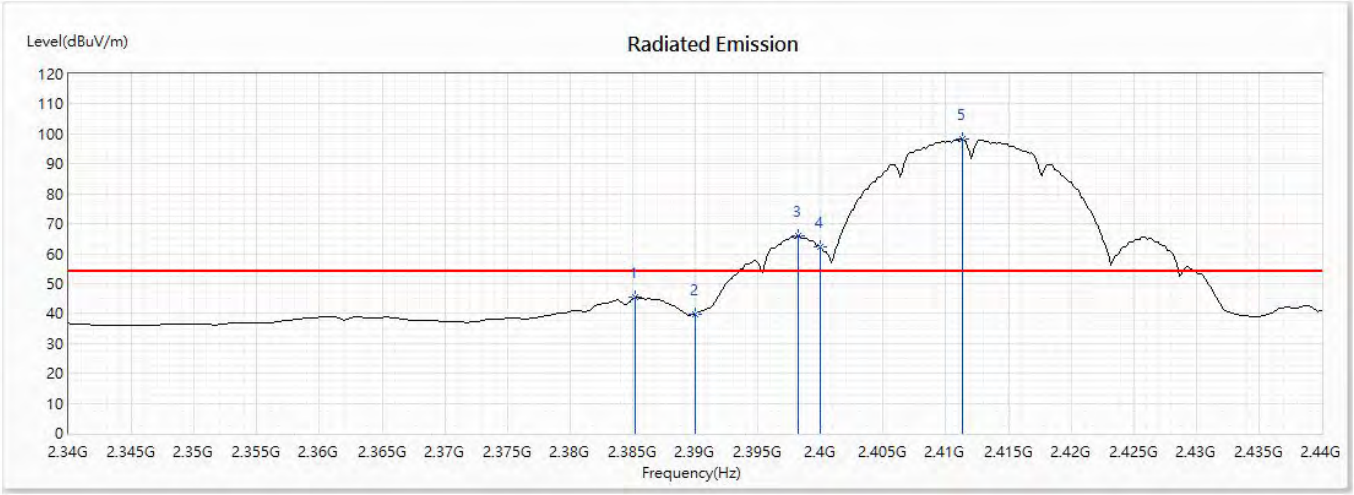
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
1	2387.391	54.76	74.00	-19.24	41.91	12.85	PK
2	2390	52.85	74.00	-21.15	39.98	12.87	PK
3	2398.406	69.63	--	--	56.68	12.95	PK
4	2400	67.00	--	--	54.04	12.96	PK
! 5	2411.014	101.32	--	--	88.31	13.01	PK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Emission Level = Reading Level + Correct Factor.

Product	:	IEEE802.11a/b/g/n 2.4+5GHz 1T1R Wi-Fi IoT Module
Test Item	:	Band Edge Data
Test Mode	:	Mode 1: Transmit (802.11b 1Mbps) (2412MHz)
Test Date	:	2020/06/24

Horizontal



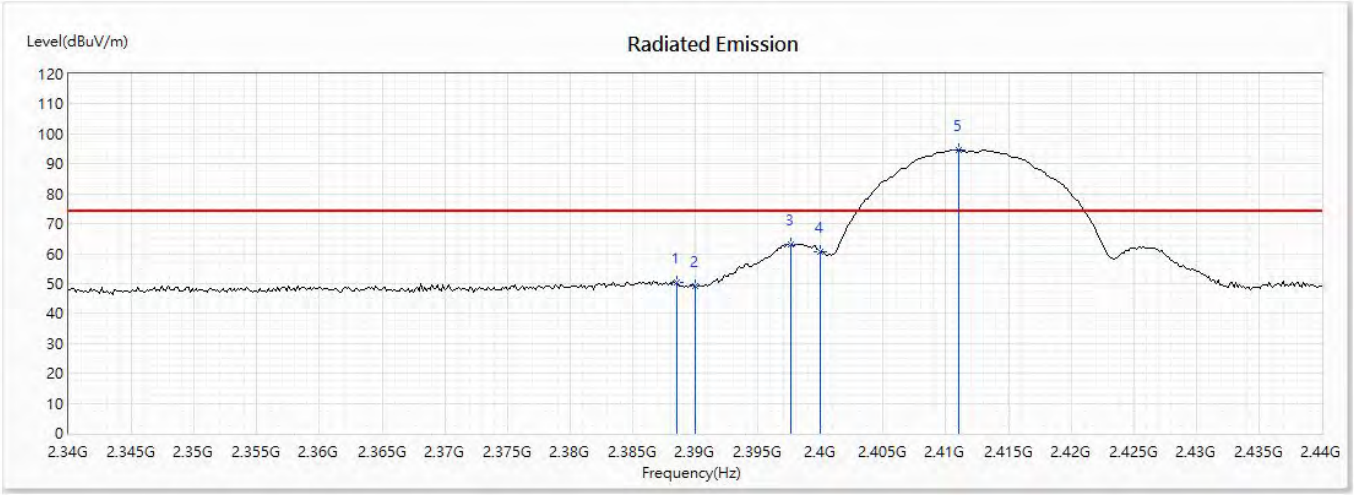
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
1	2385.217	45.33	54.00	-8.67	32.49	12.84	AV
2	2390	39.92	54.00	-14.08	27.05	12.87	AV
! 3	2398.261	65.86	--	--	52.91	12.95	AV
! 4	2400	62.36	--	--	49.40	12.96	AV
! 5	2411.304	98.25	--	--	85.23	13.02	AV

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Emission Level = Reading Level + Correct Factor.

Product	:	IEEE802.11a/b/g/n 2.4+5GHz 1T1R Wi-Fi IoT Module
Test Item	:	Band Edge Data
Test Mode	:	Mode 1: Transmit (802.11b 1Mbps) (2412MHz)
Test Date	:	2020/06/24

Vertical



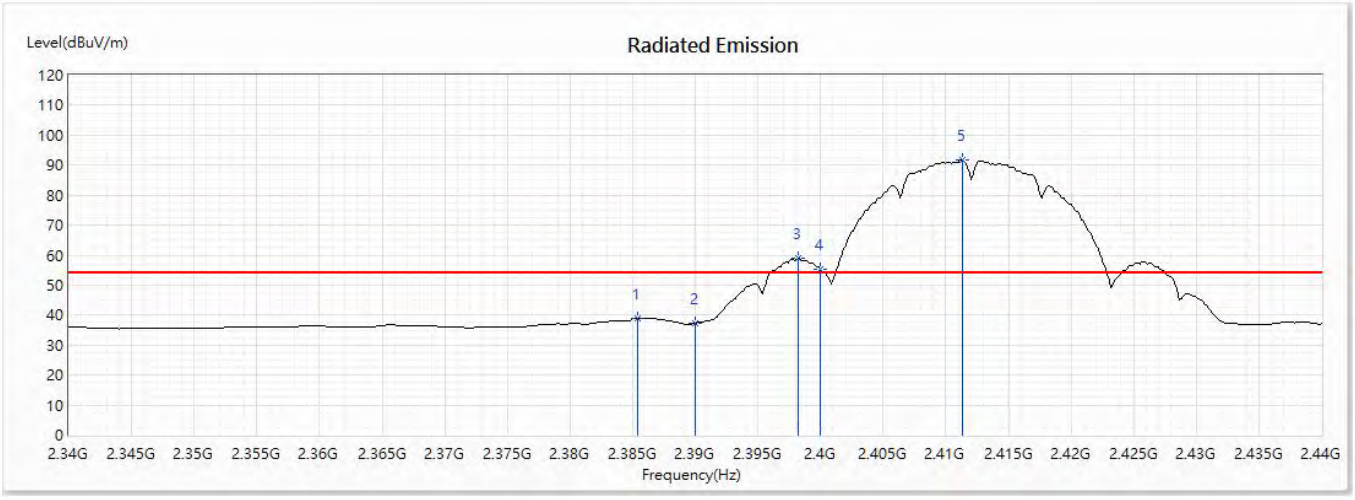
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
1	2388.551	50.55	74.00	-23.45	37.68	12.87	PK
2	2390	49.18	74.00	-24.82	36.31	12.87	PK
3	2397.681	63.10	--	--	50.16	12.94	PK
4	2400	60.62	--	--	47.66	12.96	PK
! 5	2411.014	94.73	--	--	81.72	13.01	PK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Emission Level = Reading Level + Correct Factor.

Product	:	IEEE802.11a/b/g/n 2.4+5GHz 1T1R Wi-Fi IoT Module
Test Item	:	Band Edge Data
Test Mode	:	Mode 1: Transmit (802.11b 1Mbps) (2412MHz)
Test Date	:	2020/06/24

Vertical



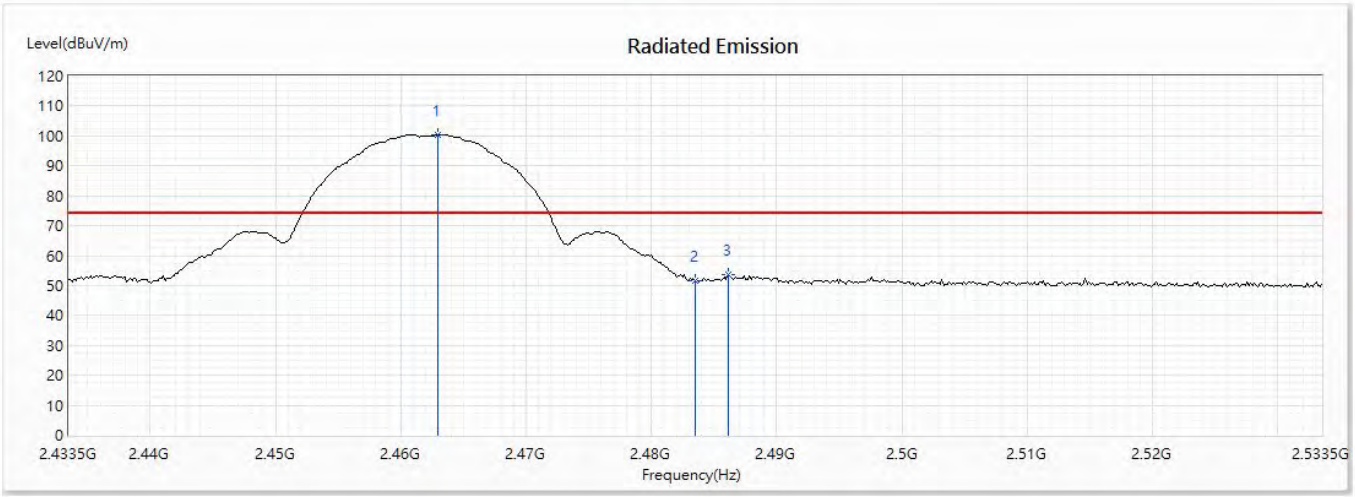
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
1	2385.362	38.86	54.00	-15.14	26.02	12.84	AV
2	2390	37.28	54.00	-16.72	24.41	12.87	AV
! 3	2398.261	58.86	--	--	45.91	12.95	AV
! 4	2400	55.47	--	--	42.51	12.96	AV
! 5	2411.304	91.64	--	--	78.62	13.02	AV

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Emission Level = Reading Level + Correct Factor.

Product	:	IEEE802.11a/b/g/n 2.4+5GHz 1T1R Wi-Fi IoT Module
Test Item	:	Band Edge Data
Test Mode	:	Mode 1: Transmit (802.11b 1Mbps) (2462MHz)
Test Date	:	2020/06/24

Horizontal



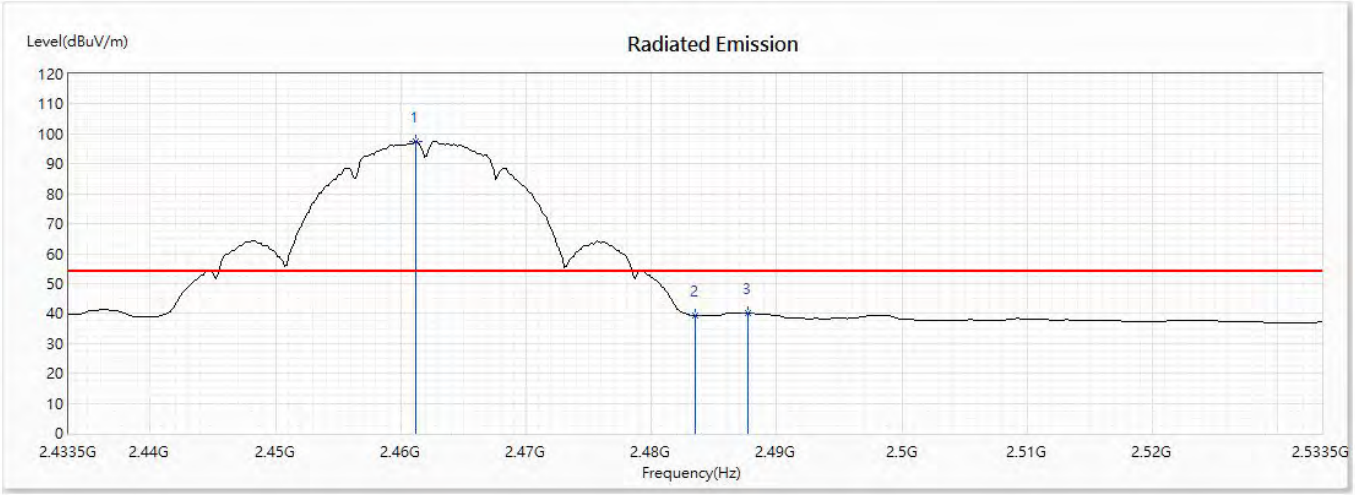
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
! 1	2462.92	100.53	--	--	87.20	13.33	PK
2	2483.5	51.50	74.00	-22.50	38.02	13.48	PK
3	2486.109	53.51	74.00	-20.49	40.01	13.50	PK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Emission Level = Reading Level + Correct Factor.

Product	:	IEEE802.11a/b/g/n 2.4+5GHz 1T1R Wi-Fi IoT Module
Test Item	:	Band Edge Data
Test Mode	:	Mode 1: Transmit (802.11b 1Mbps) (2462MHz)
Test Date	:	2020/06/24

Horizontal



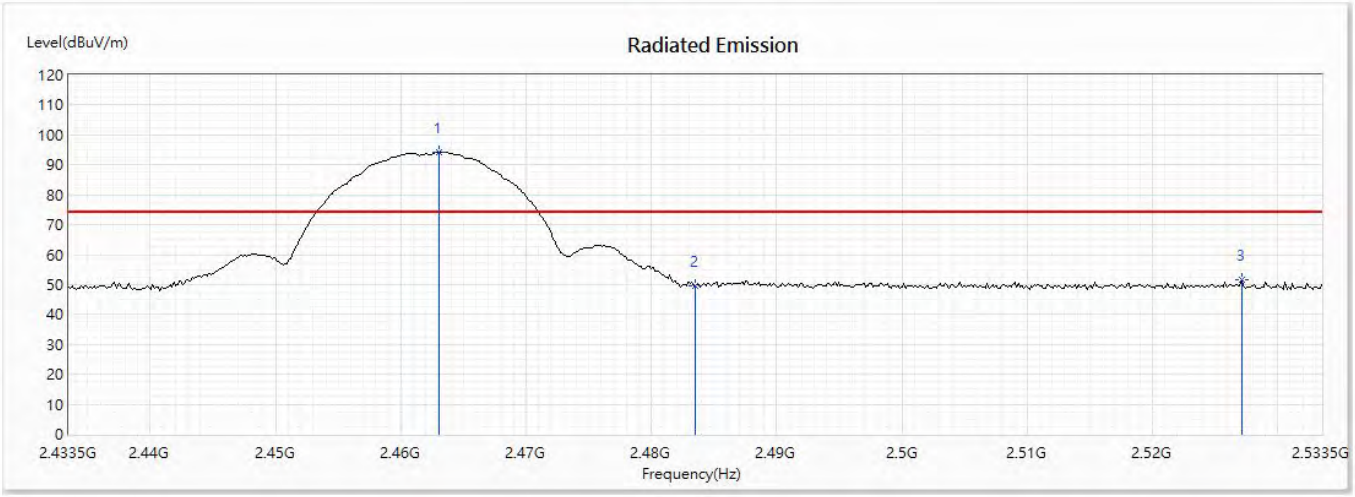
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
! 1	2461.181	97.39	--	--	84.08	13.31	AV
2	2483.5	39.14	54.00	-14.86	25.66	13.48	AV
3	2487.703	40.31	54.00	-13.69	26.80	13.51	AV

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Emission Level = Reading Level + Correct Factor.

Product	:	IEEE802.11a/b/g/n 2.4+5GHz 1T1R Wi-Fi IoT Module
Test Item	:	Band Edge Data
Test Mode	:	Mode 1: Transmit (802.11b 1Mbps) (2462MHz)
Test Date	:	2020/06/24

Vertical



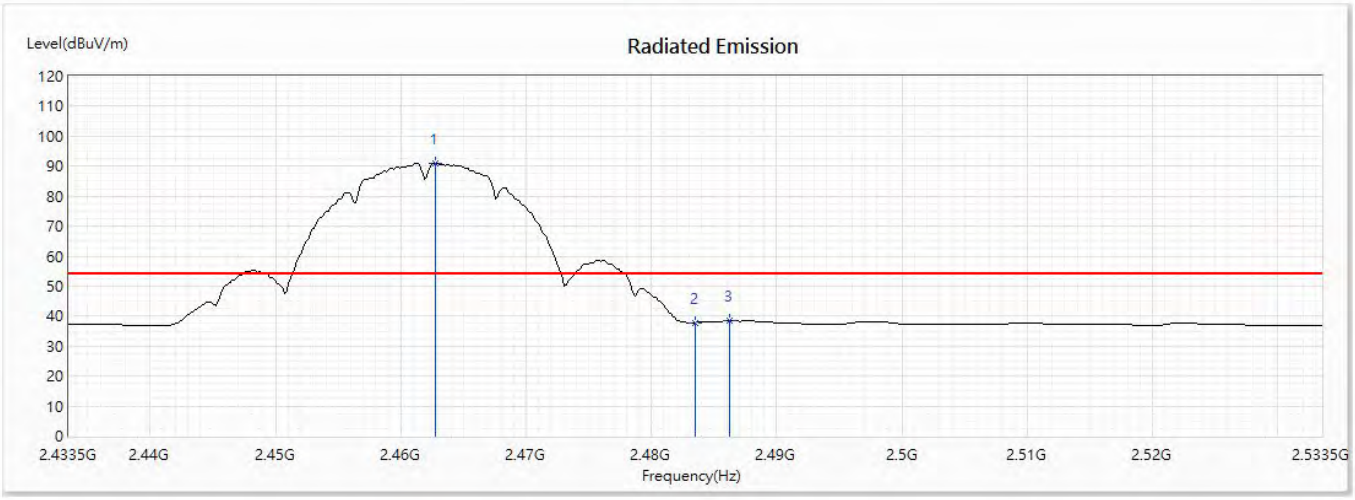
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
! 1	2463.065	94.27	--	--	80.94	13.33	PK
2	2483.5	49.37	74.00	-24.63	35.89	13.48	PK
3	2527.123	51.56	74.00	-22.44	38.04	13.52	PK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Emission Level = Reading Level + Correct Factor.

Product	:	IEEE802.11a/b/g/n 2.4+5GHz 1T1R Wi-Fi IoT Module
Test Item	:	Band Edge Data
Test Mode	:	Mode 1: Transmit (802.11b 1Mbps) (2462MHz)
Test Date	:	2020/06/24

Vertical



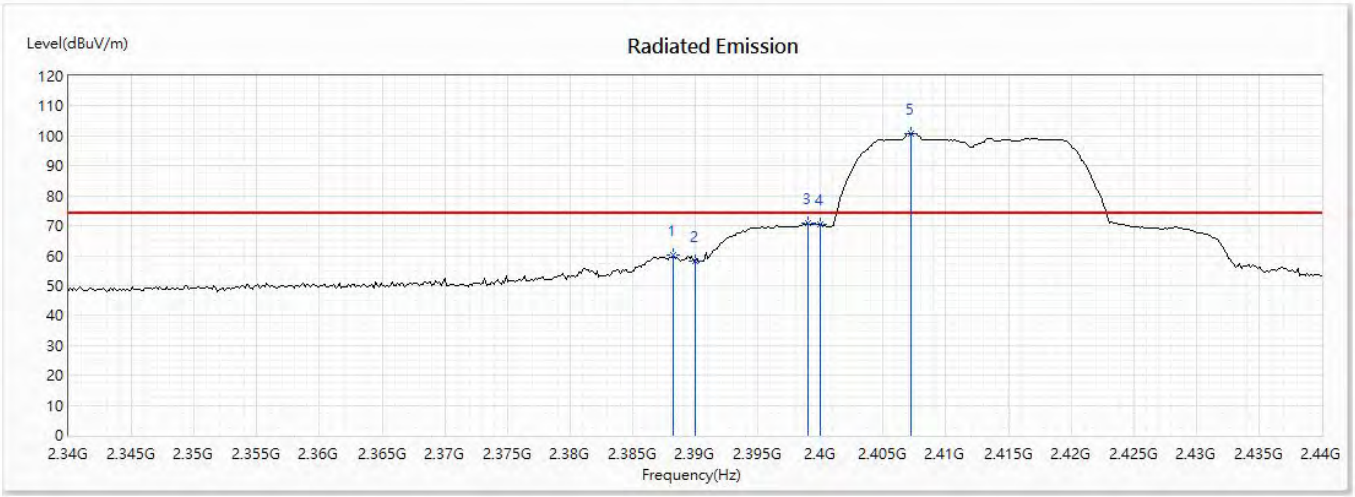
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
! 1	2462.775	91.10	--	--	77.78	13.32	AV
2	2483.5	37.82	54.00	-16.18	24.34	13.48	AV
3	2486.254	38.40	54.00	-15.60	24.90	13.50	AV

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Emission Level = Reading Level + Correct Factor.

Product	:	IEEE802.11a/b/g/n 2.4+5GHz 1T1R Wi-Fi IoT Module
Test Item	:	Band Edge Data
Test Mode	:	Mode 2: Transmit (802.11g 6Mbps) (2412MHz)
Test Date	:	2020/06/24

Horizontal



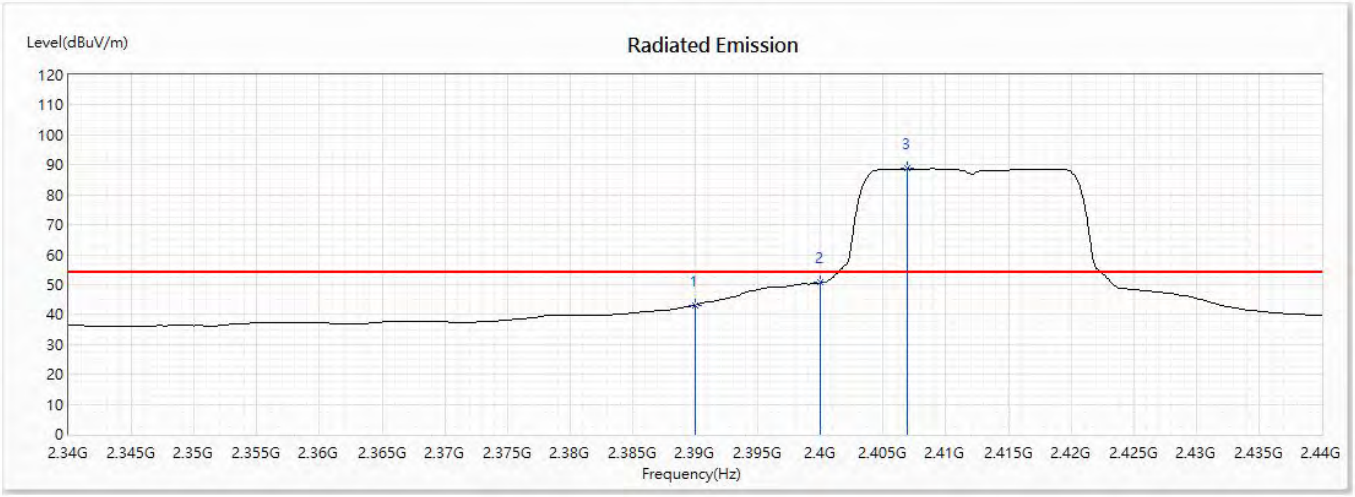
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
1	2388.261	60.02	74.00	-13.98	47.15	12.87	PK
2	2390	58.00	74.00	-16.00	45.13	12.87	PK
3	2398.986	70.74	--	--	57.79	12.95	PK
4	2400	70.32	--	--	57.36	12.96	PK
! 5	2407.246	100.84	--	--	87.85	12.99	PK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Emission Level = Reading Level + Correct Factor.

Product	:	IEEE802.11a/b/g/n 2.4+5GHz 1T1R Wi-Fi IoT Module
Test Item	:	Band Edge Data
Test Mode	:	Mode 2: Transmit (802.11g 6Mbps) (2412MHz)
Test Date	:	2020/06/24

Horizontal



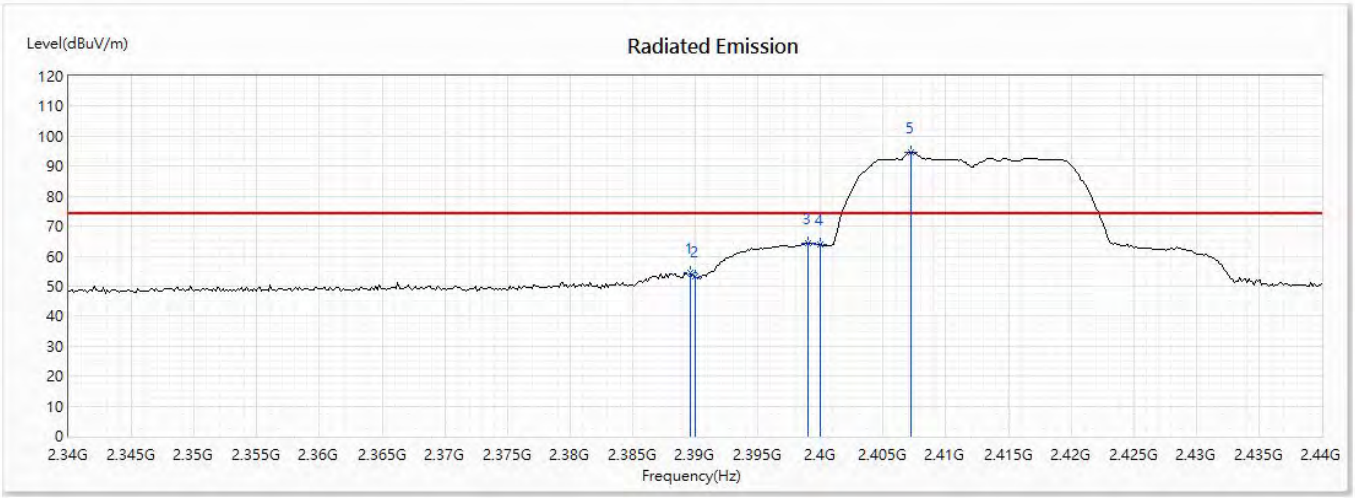
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
1	2390	43.20	54.00	-10.80	30.33	12.87	AV
2	2400	50.62	--	--	37.66	12.96	AV
! 3	2406.957	88.68	--	--	75.69	12.99	AV

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Emission Level = Reading Level + Correct Factor.

Product	:	IEEE802.11a/b/g/n 2.4+5GHz 1T1R Wi-Fi IoT Module
Test Item	:	Band Edge Data
Test Mode	:	Mode 2: Transmit (802.11g 6Mbps) (2412MHz)
Test Date	:	2020/06/24

Vertical



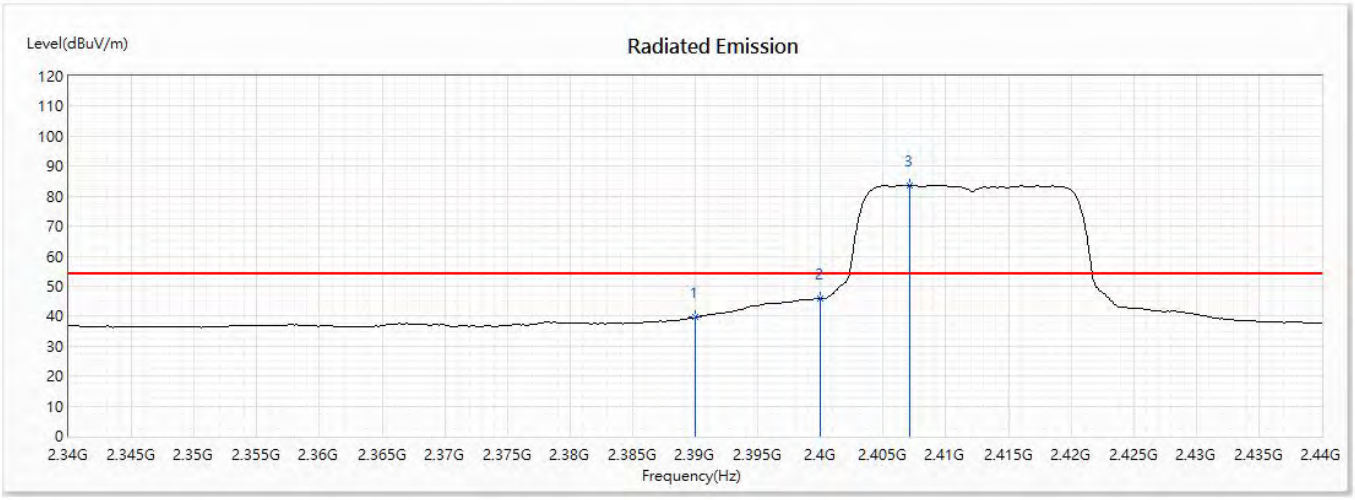
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
1	2389.565	54.52	74.00	-19.48	41.65	12.87	PK
2	2390	53.15	74.00	-20.85	40.28	12.87	PK
3	2398.986	64.34	--	--	51.39	12.95	PK
4	2400	63.91	--	--	50.95	12.96	PK
! 5	2407.246	94.46	--	--	81.47	12.99	PK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Emission Level = Reading Level + Correct Factor.

Product	:	IEEE802.11a/b/g/n 2.4+5GHz 1T1R Wi-Fi IoT Module
Test Item	:	Band Edge Data
Test Mode	:	Mode 2: Transmit (802.11g 6Mbps) (2412MHz)
Test Date	:	2020/06/24

Vertical



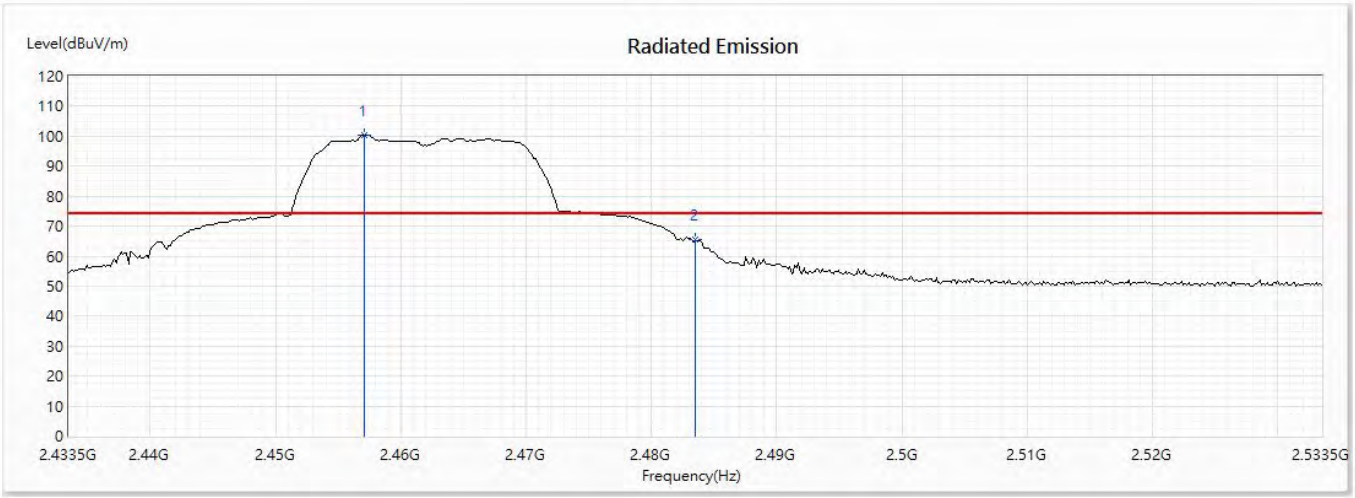
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
1	2390	39.55	54.00	-14.45	26.68	12.87	AV
2	2400	45.82	--	--	32.86	12.96	AV
! 3	2407.101	83.68	--	--	70.69	12.99	AV

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Emission Level = Reading Level + Correct Factor.

Product	:	IEEE802.11a/b/g/n 2.4+5GHz 1T1R Wi-Fi IoT Module
Test Item	:	Band Edge Data
Test Mode	:	Mode 2: Transmit (802.11g 6Mbps) (2462MHz)
Test Date	:	2020/06/24

Horizontal



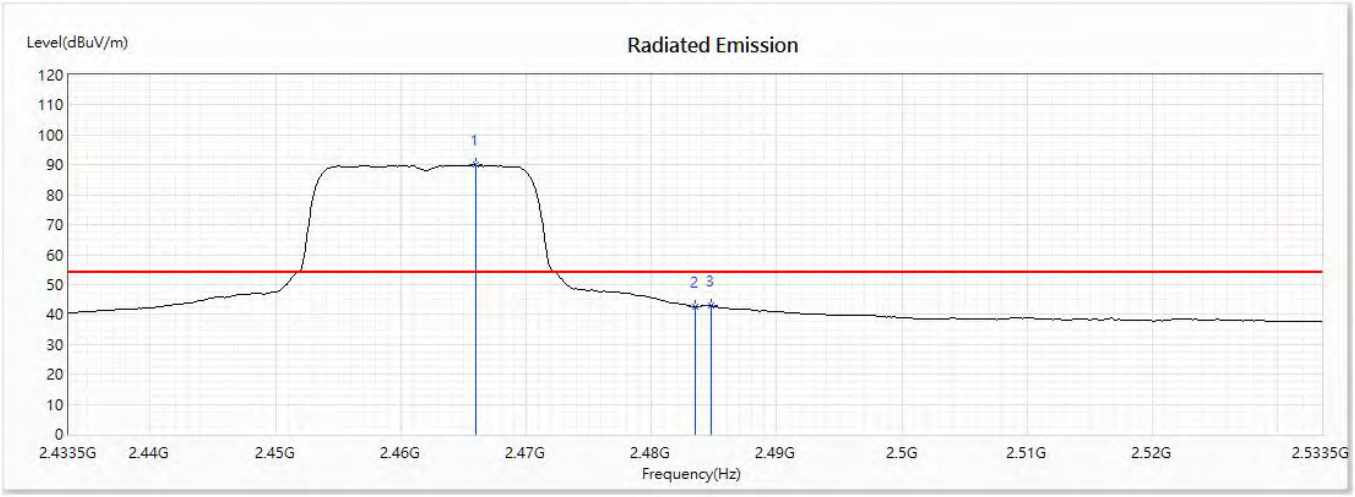
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
! 1	2457.123	100.43	--	--	87.16	13.27	PK
2	2483.5	65.63	74.00	-8.37	52.15	13.48	PK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Emission Level = Reading Level + Correct Factor.

Product	:	IEEE802.11a/b/g/n 2.4+5GHz 1T1R Wi-Fi IoT Module
Test Item	:	Band Edge Data
Test Mode	:	Mode 2: Transmit (802.11g 6Mbps) (2462MHz)
Test Date	:	2020/06/24

Horizontal



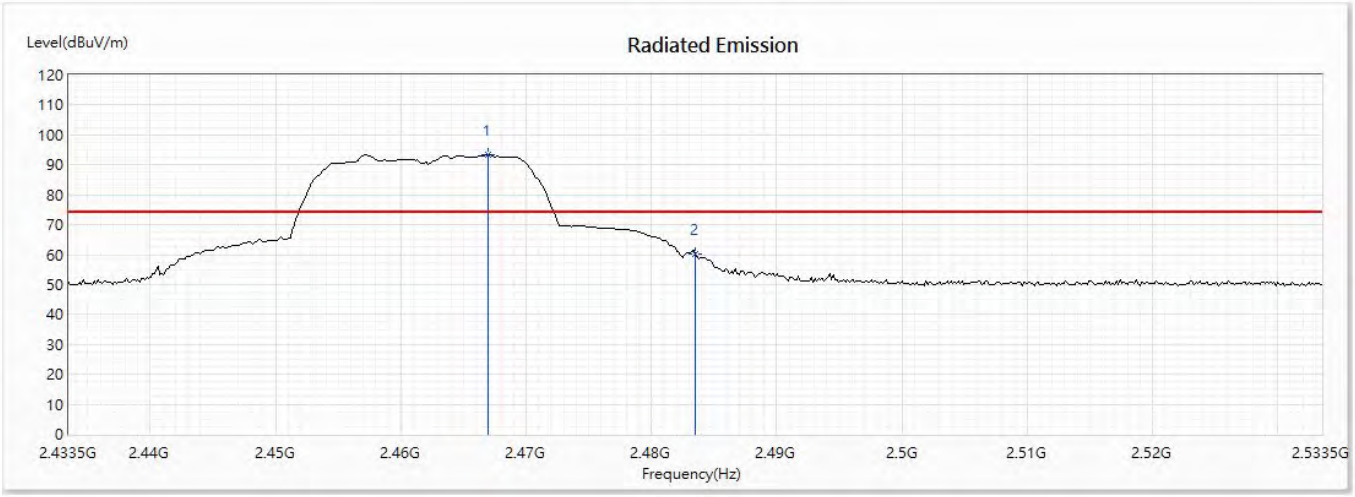
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
! 1	2465.964	90.01	--	--	76.67	13.34	AV
2	2483.5	42.47	54.00	-11.53	28.99	13.48	AV
3	2484.804	42.92	54.00	-11.08	29.43	13.49	AV

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Emission Level = Reading Level + Correct Factor.

Product	:	IEEE802.11a/b/g/n 2.4+5GHz 1T1R Wi-Fi IoT Module
Test Item	:	Band Edge Data
Test Mode	:	Mode 2: Transmit (802.11g 6Mbps) (2462MHz)
Test Date	:	2020/06/24

Vertical



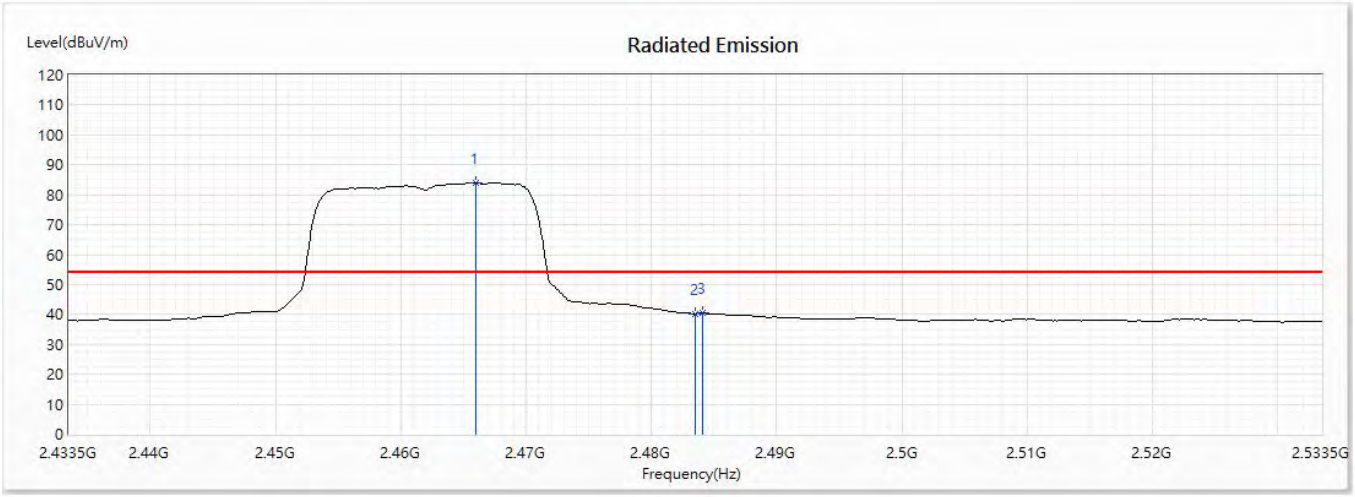
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
! 1	2466.978	93.29	--	--	79.94	13.35	PK
2	2483.5	60.26	74.00	-13.74	46.78	13.48	PK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Emission Level = Reading Level + Correct Factor.

Product	:	IEEE802.11a/b/g/n 2.4+5GHz 1T1R Wi-Fi IoT Module
Test Item	:	Band Edge Data
Test Mode	:	Mode 2: Transmit (802.11g 6Mbps) (2462MHz)
Test Date	:	2020/06/24

Vertical



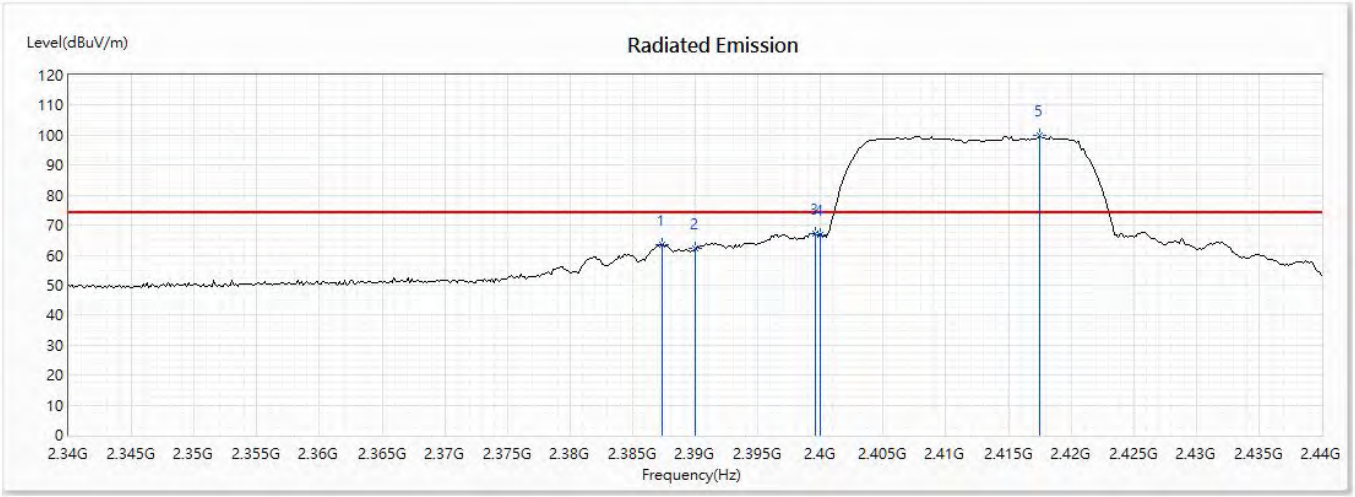
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
! 1	2465.964	84.00	--	--	70.66	13.34	AV
2	2483.5	40.00	54.00	-14.00	26.52	13.48	AV
3	2484.08	40.48	54.00	-13.52	26.99	13.49	AV

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Emission Level = Reading Level + Correct Factor.

Product	:	IEEE802.11a/b/g/n 2.4+5GHz 1T1R Wi-Fi IoT Module
Test Item	:	Band Edge Data
Test Mode	:	Mode 3: Transmit (802.11n MCS0 7.2Mbps 20M-BW) (2412MHz)
Test Date	:	2020/06/24

Horizontal



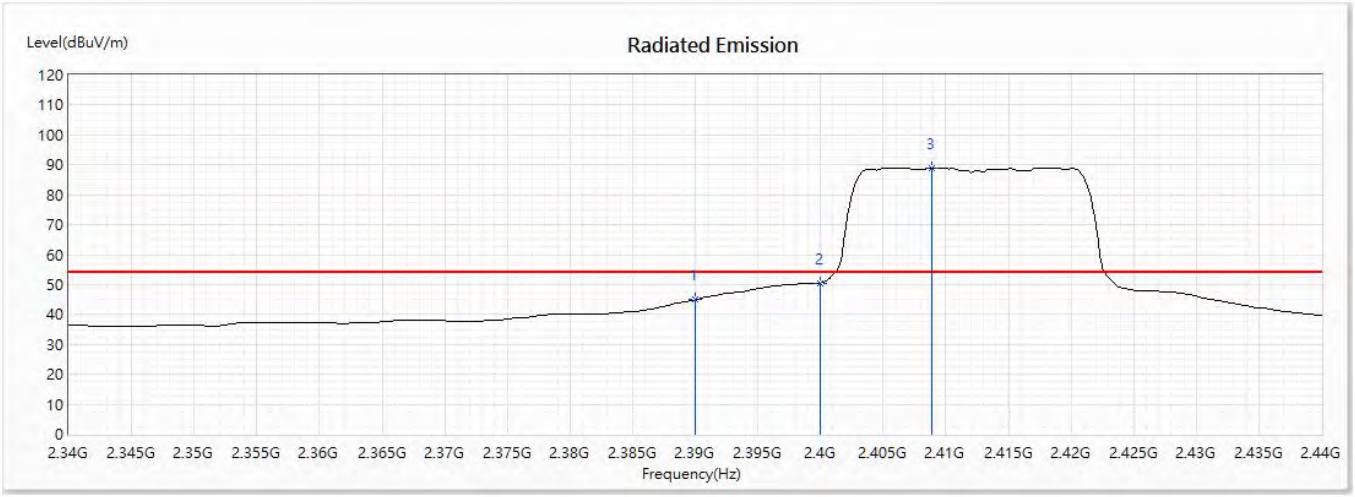
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
1	2387.391	63.45	74.00	-10.55	50.60	12.85	PK
2	2390	62.29	74.00	-11.71	49.42	12.87	PK
3	2399.565	67.13	--	--	54.18	12.95	PK
4	2400	66.88	--	--	53.92	12.96	PK
! 5	2417.536	99.78	--	--	86.73	13.05	PK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Emission Level = Reading Level + Correct Factor.

Product	:	IEEE802.11a/b/g/n 2.4+5GHz 1T1R Wi-Fi IoT Module
Test Item	:	Band Edge Data
Test Mode	:	Mode 3: Transmit (802.11n MCS0 7.2Mbps 20M-BW) (2412MHz)
Test Date	:	2020/06/24

Horizontal



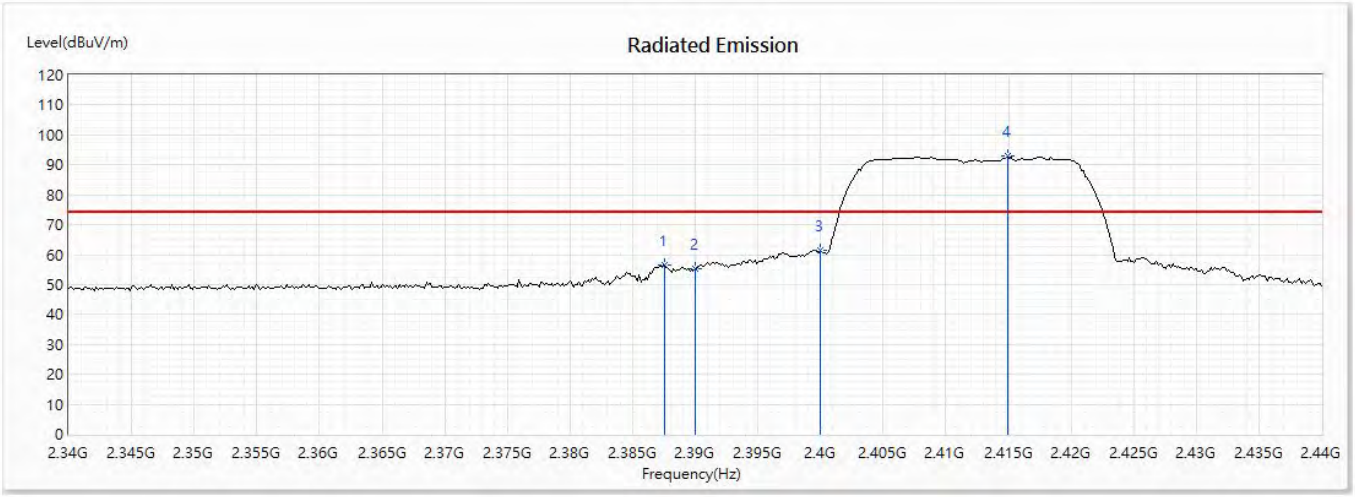
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
1	2390	44.95	54.00	-9.05	32.08	12.87	AV
2	2400	50.47	--	--	37.51	12.96	AV
! 3	2408.841	89.05	--	--	76.05	13.00	AV

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Emission Level = Reading Level + Correct Factor.

Product	:	IEEE802.11a/b/g/n 2.4+5GHz 1T1R Wi-Fi IoT Module
Test Item	:	Band Edge Data
Test Mode	:	Mode 3: Transmit (802.11n MCS0 7.2Mbps 20M-BW) (2412MHz)
Test Date	:	2020/06/24

Vertical



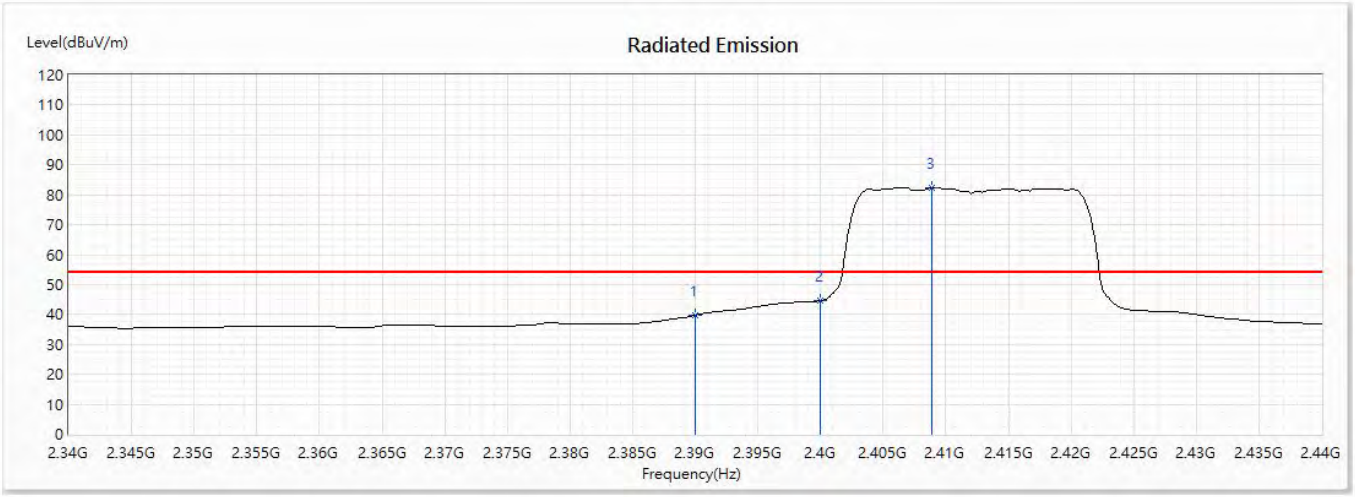
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
1	2387.536	56.62	74.00	-17.38	43.76	12.86	PK
2	2390	55.28	74.00	-18.72	42.41	12.87	PK
3	2400	61.29	--	--	48.33	12.96	PK
! 4	2414.928	92.82	--	--	79.79	13.03	PK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Emission Level = Reading Level + Correct Factor.

Product	:	IEEE802.11a/b/g/n 2.4+5GHz 1T1R Wi-Fi IoT Module
Test Item	:	Band Edge Data
Test Mode	:	Mode 3: Transmit (802.11n MCS0 7.2Mbps 20M-BW) (2412MHz)
Test Date	:	2020/06/24

Vertical



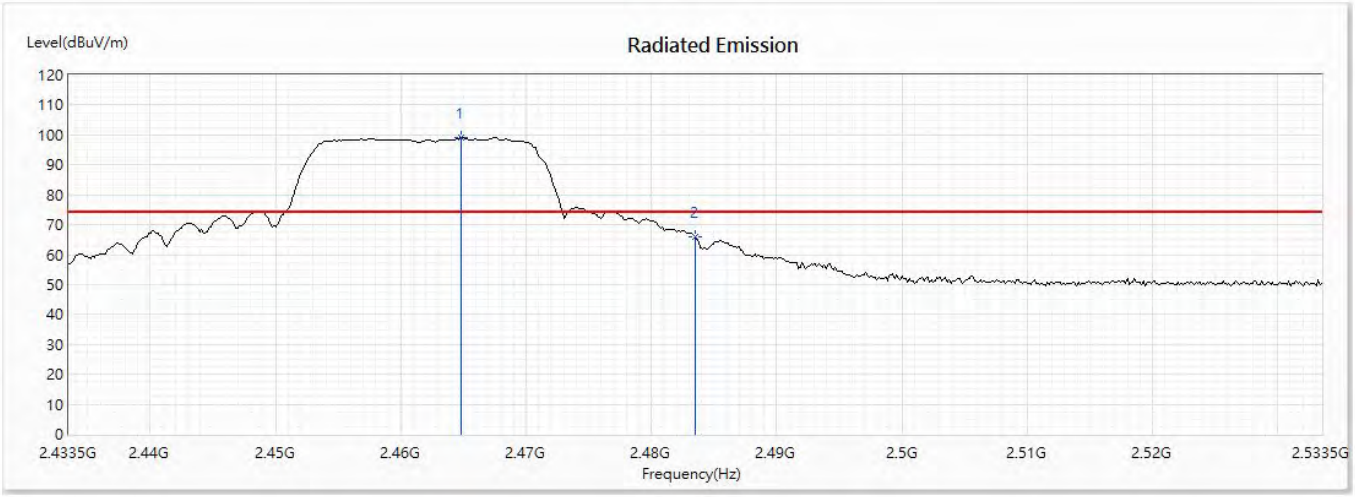
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
1	2390	39.73	54.00	-14.27	26.86	12.87	AV
2	2400	44.60	--	--	31.64	12.96	AV
! 3	2408.841	82.31	--	--	69.31	13.00	AV

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Emission Level = Reading Level + Correct Factor.

Product	:	IEEE802.11a/b/g/n 2.4+5GHz 1T1R Wi-Fi IoT Module
Test Item	:	Band Edge Data
Test Mode	:	Mode 3: Transmit (802.11n MCS0 7.2Mbps 20M-BW) (2462MHz)
Test Date	:	2020/06/24

Horizontal



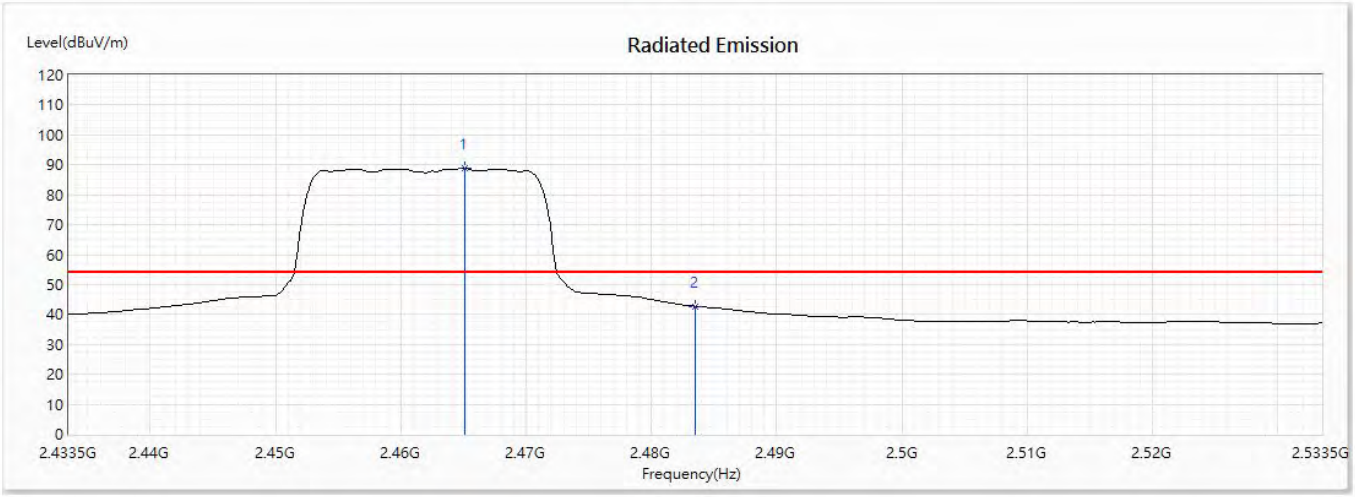
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
! 1	2464.804	98.98	--	--	85.65	13.33	PK
2	2483.5	65.95	74.00	-8.05	52.47	13.48	PK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Emission Level = Reading Level + Correct Factor.

Product	:	IEEE802.11a/b/g/n 2.4+5GHz 1T1R Wi-Fi IoT Module
Test Item	:	Band Edge Data
Test Mode	:	Mode 3: Transmit (802.11n MCS0 7.2Mbps 20M-BW) (2462MHz)
Test Date	:	2020/06/24

Horizontal



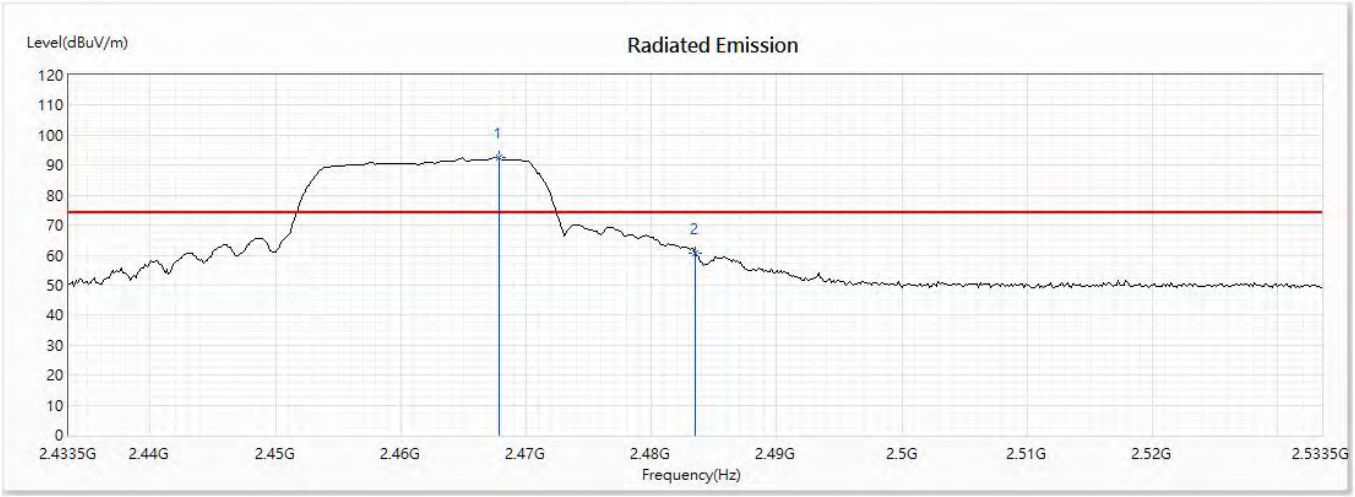
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
! 1	2465.094	88.74	--	--	75.40	13.34	AV
2	2483.5	42.75	54.00	-11.25	29.27	13.48	AV

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Emission Level = Reading Level + Correct Factor.

Product	:	IEEE802.11a/b/g/n 2.4+5GHz 1T1R Wi-Fi IoT Module
Test Item	:	Band Edge Data
Test Mode	:	Mode 3: Transmit (802.11n MCS0 7.2Mbps 20M-BW) (2462MHz)
Test Date	:	2020/06/24

Vertical



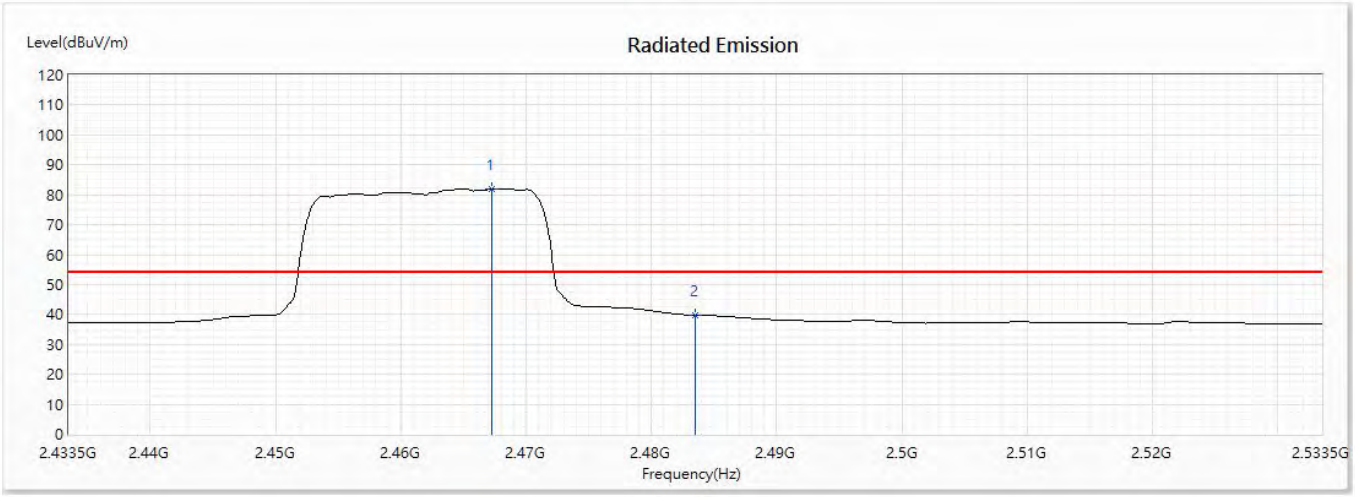
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
! 1	2467.848	92.57	--	--	79.21	13.36	PK
2	2483.5	60.68	74.00	-13.32	47.20	13.48	PK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Emission Level = Reading Level + Correct Factor.

Product	:	IEEE802.11a/b/g/n 2.4+5GHz 1T1R Wi-Fi IoT Module
Test Item	:	Band Edge Data
Test Mode	:	Mode 3: Transmit (802.11n MCS0 7.2Mbps 20M-BW) (2462MHz)
Test Date	:	2020/06/24

Vertical



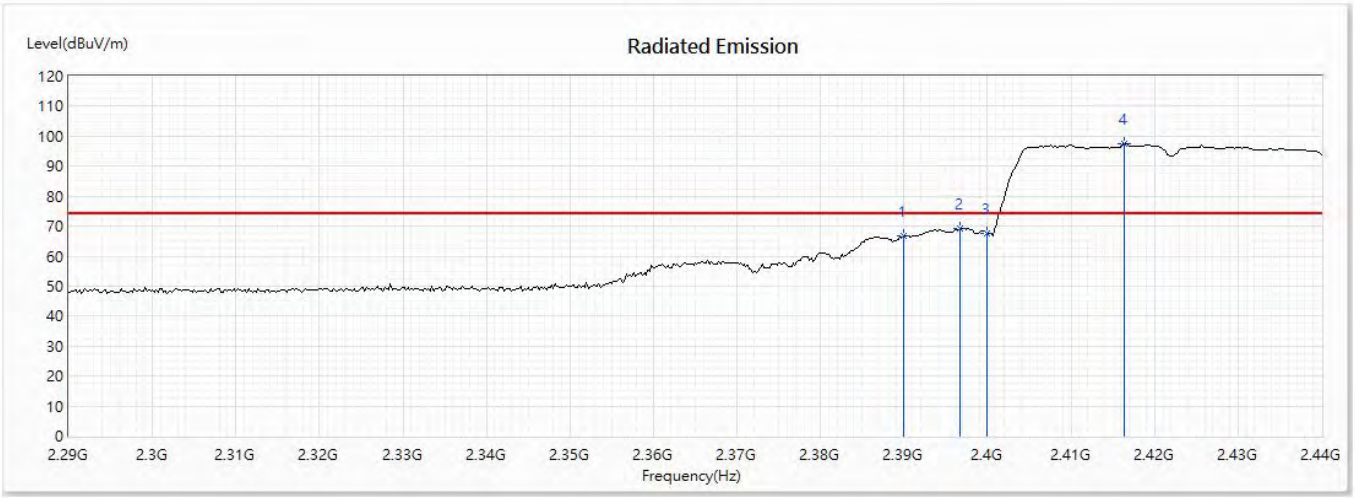
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
! 1	2467.268	82.11	--	--	68.76	13.35	AV
2	2483.5	39.80	54.00	-14.20	26.32	13.48	AV

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Emission Level = Reading Level + Correct Factor.

Product	:	IEEE802.11a/b/g/n 2.4+5GHz 1T1R Wi-Fi IoT Module
Test Item	:	Band Edge Data
Test Mode	:	Mode 4: Transmit (802.11n MCS0 15Mbps 40M-BW) (2422MHz)
Test Date	:	2020/06/24

Horizontal



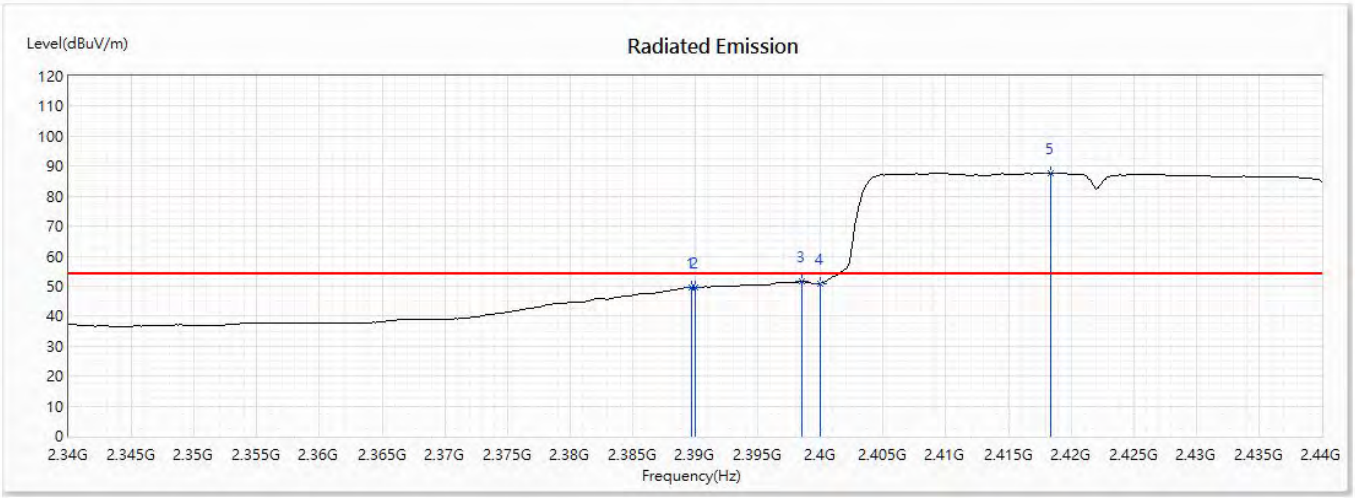
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
1	2390	66.64	74.00	-7.36	53.77	12.87	PK
2	2396.739	69.19	--	--	56.26	12.93	PK
3	2400	67.55	--	--	54.59	12.96	PK
! 4	2416.304	97.34	--	--	84.30	13.04	PK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Emission Level = Reading Level + Correct Factor.

Product	:	IEEE802.11a/b/g/n 2.4+5GHz 1T1R Wi-Fi IoT Module
Test Item	:	Band Edge Data
Test Mode	:	Mode 4: Transmit (802.11n MCS0 15Mbps 40M-BW) (2422MHz)
Test Date	:	2020/06/24

Horizontal



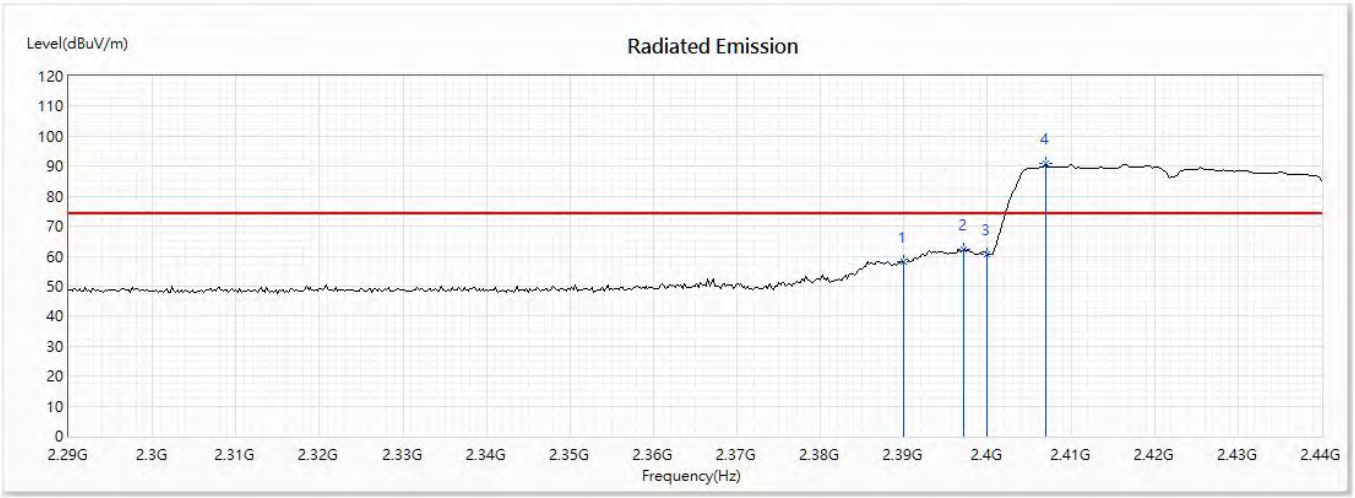
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
1	2389.71	49.69	54.00	-4.31	36.82	12.87	AV
2	2390	49.63	54.00	-4.37	36.76	12.87	AV
3	2398.551	51.46	--	--	38.51	12.95	AV
4	2400	50.92	--	--	37.96	12.96	AV
! 5	2418.406	87.67	--	--	74.62	13.05	AV

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Emission Level = Reading Level + Correct Factor.

Product	:	IEEE802.11a/b/g/n 2.4+5GHz 1T1R Wi-Fi IoT Module
Test Item	:	Band Edge Data
Test Mode	:	Mode 4: Transmit (802.11n MCS0 15Mbps 40M-BW) (2422MHz)
Test Date	:	2020/06/24

Vertical



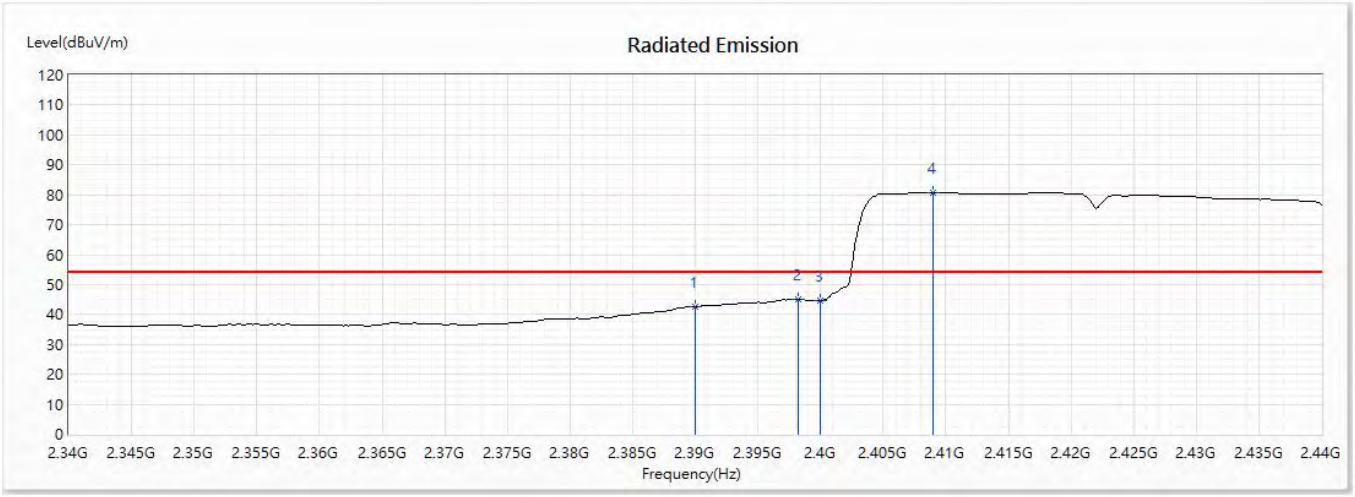
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
1	2390	58.36	74.00	-15.64	45.49	12.87	PK
2	2397.174	62.17	--	--	49.24	12.93	PK
3	2400	60.67	--	--	47.71	12.96	PK
! 4	2406.957	90.99	--	--	78.00	12.99	PK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Emission Level = Reading Level + Correct Factor.

Product	:	IEEE802.11a/b/g/n 2.4+5GHz 1T1R Wi-Fi IoT Module
Test Item	:	Band Edge Data
Test Mode	:	Mode 4: Transmit (802.11n MCS0 15Mbps 40M-BW) (2422MHz)
Test Date	:	2020/06/24

Vertical



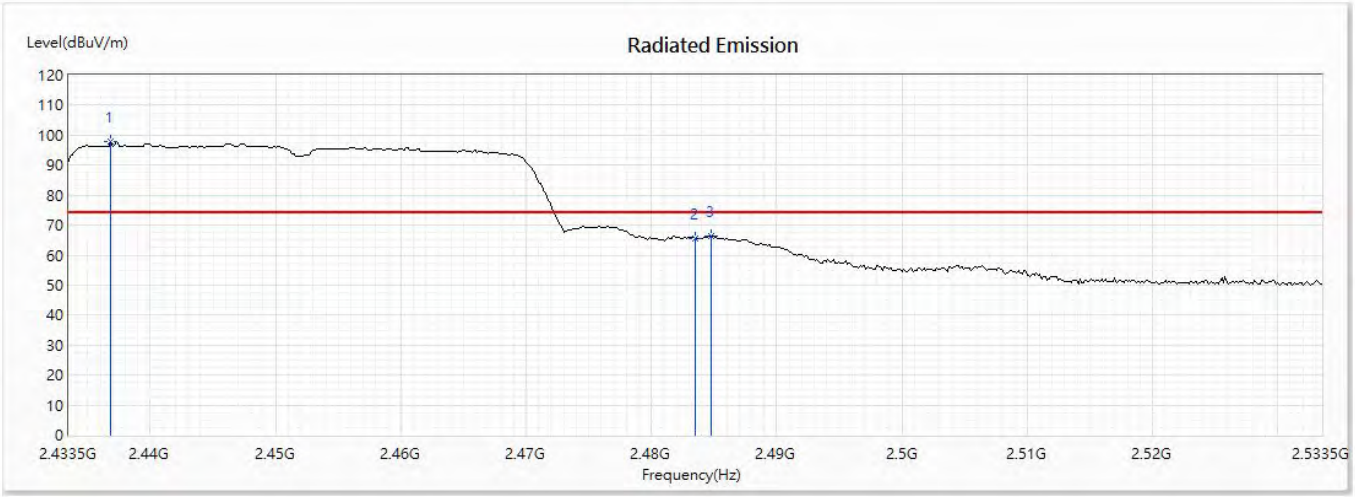
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
1	2390	42.68	54.00	-11.32	29.81	12.87	AV
2	2398.261	45.04	--	--	32.09	12.95	AV
3	2400	44.60	--	--	31.64	12.96	AV
! 4	2408.986	80.75	--	--	67.75	13.00	AV

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Emission Level = Reading Level + Correct Factor.

Product	:	IEEE802.11a/b/g/n 2.4+5GHz 1T1R Wi-Fi IoT Module
Test Item	:	Band Edge Data
Test Mode	:	Mode 4: Transmit (802.11n MCS0 15Mbps 40M-BW) (2452MHz)
Test Date	:	2020/06/24

Horizontal



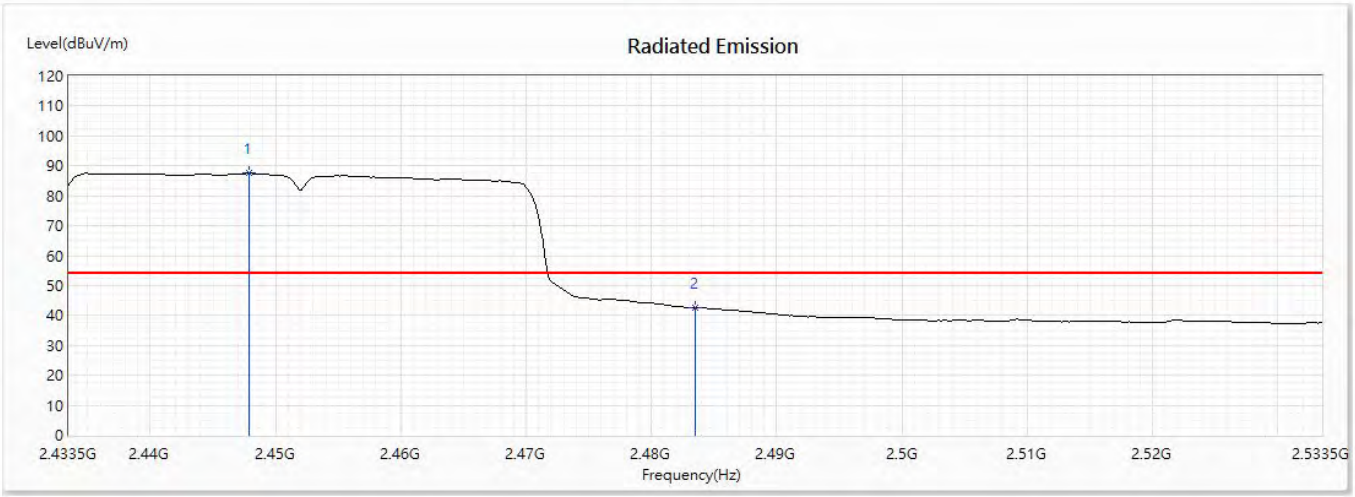
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
! 1	2436.833	97.81	--	--	84.66	13.15	PK
2	2483.5	65.66	74.00	-8.34	52.18	13.48	PK
3	2484.804	66.28	74.00	-7.72	52.79	13.49	PK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Emission Level = Reading Level + Correct Factor.

Product	:	IEEE802.11a/b/g/n 2.4+5GHz 1T1R Wi-Fi IoT Module
Test Item	:	Band Edge Data
Test Mode	:	Mode 4: Transmit (802.11n MCS0 15Mbps 40M-BW) (2452MHz)
Test Date	:	2020/06/24

Horizontal



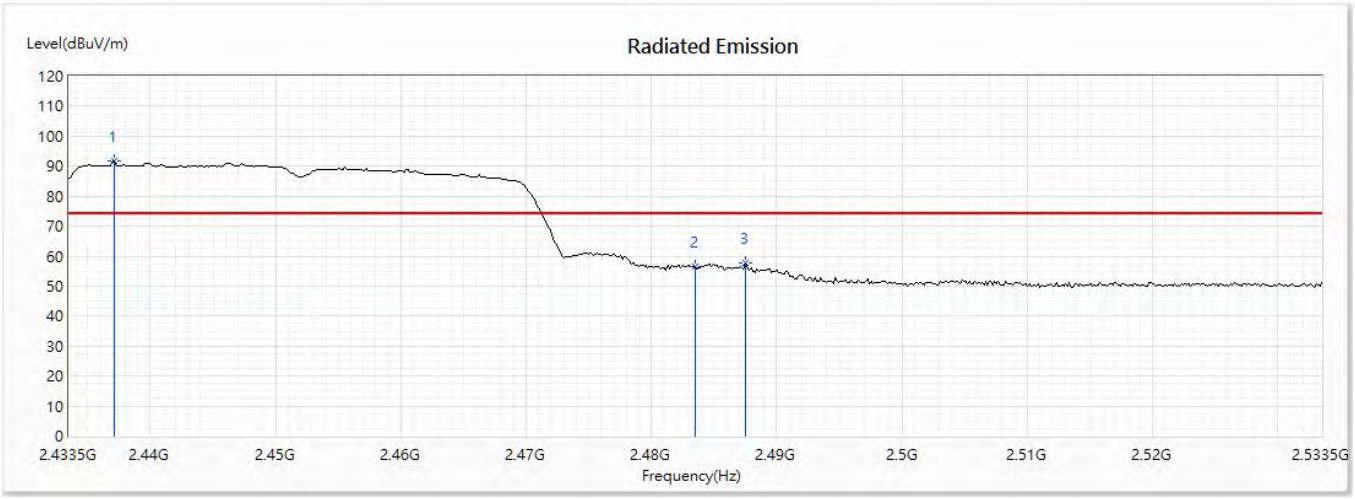
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
! 1	2447.848	87.56	--	--	74.34	13.22	AV
2	2483.5	42.56	54.00	-11.44	29.08	13.48	AV

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Emission Level = Reading Level + Correct Factor.

Product	:	IEEE802.11a/b/g/n 2.4+5GHz 1T1R Wi-Fi IoT Module
Test Item	:	Band Edge Data
Test Mode	:	Mode 4: Transmit (802.11n MCS0 15Mbps 40M-BW) (2452MHz)
Test Date	:	2020/06/24

Vertical



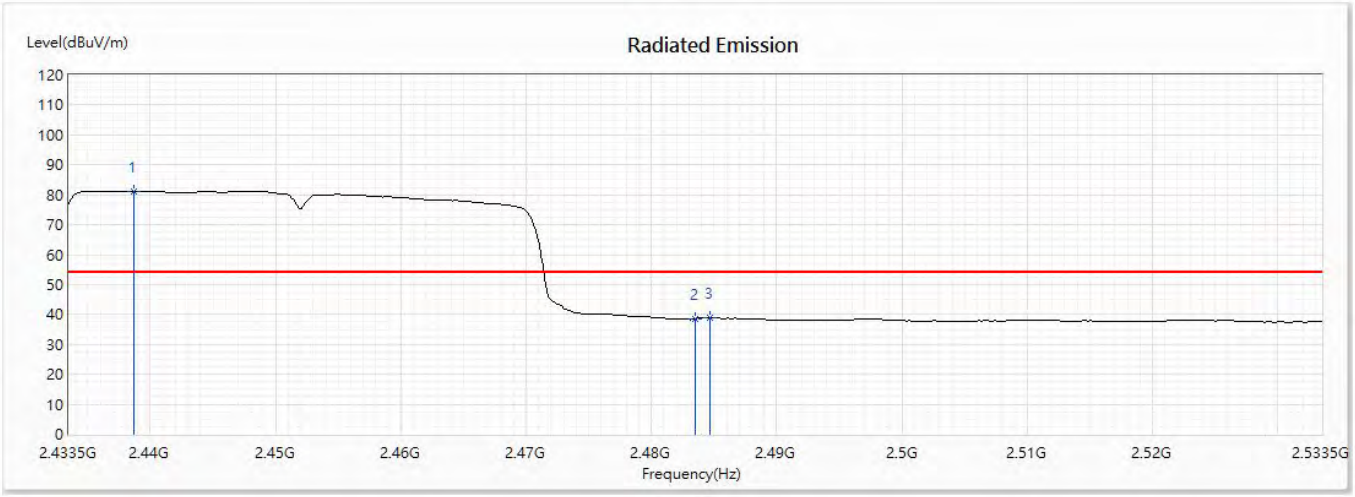
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
! 1	2437.123	91.74	--	--	78.59	13.15	PK
2	2483.5	56.59	74.00	-17.41	43.11	13.48	PK
3	2487.558	57.57	74.00	-16.43	44.06	13.51	PK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Emission Level = Reading Level + Correct Factor.

Product	:	IEEE802.11a/b/g/n 2.4+5GHz 1T1R Wi-Fi IoT Module
Test Item	:	Band Edge Data
Test Mode	:	Mode 4: Transmit (802.11n MCS0 15Mbps 40M-BW) (2452MHz)
Test Date	:	2020/06/24

Vertical



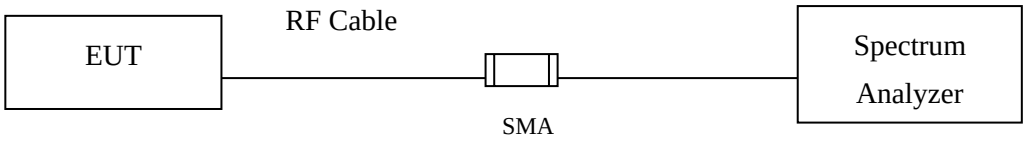
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
! 1	2438.717	81.26	--	--	68.09	13.17	AV
2	2483.5	38.44	54.00	-15.56	24.96	13.48	AV
3	2484.659	38.89	54.00	-15.11	25.40	13.49	AV

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Emission Level = Reading Level + Correct Factor.

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 : IEEE802.11a/b/g/n 2.4+5GHz 1T1R Wi-Fi IoT Module
Test Item : 6dB Bandwidth Data
Test Mode : Mode 1: Transmit (802.11b 1Mbps)

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
01	2412	10150	>500	Pass
06	2437	10150	>500	Pass
11	2462	10150	>500	Pass

Figure Channel 01:

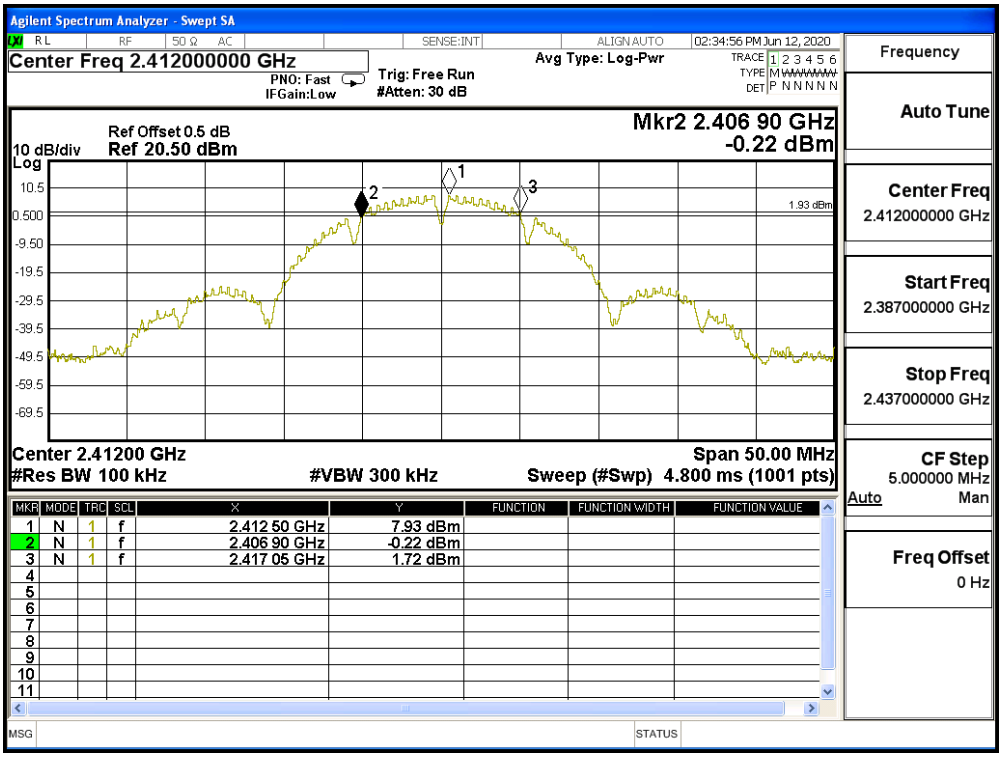


Figure Channel 06:

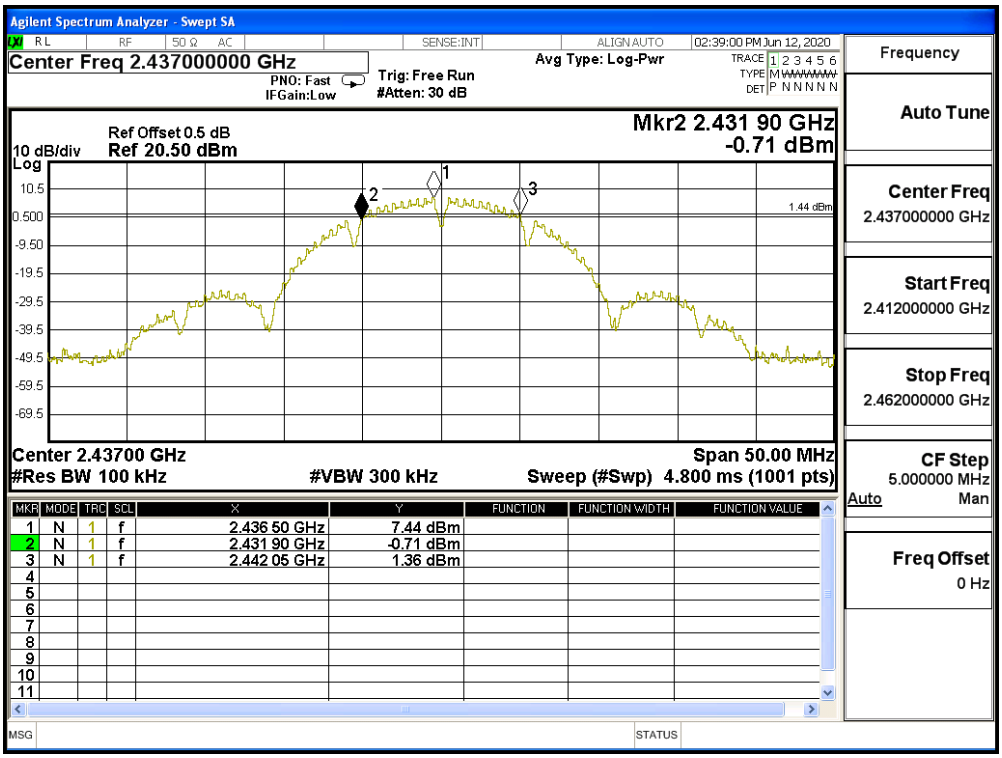
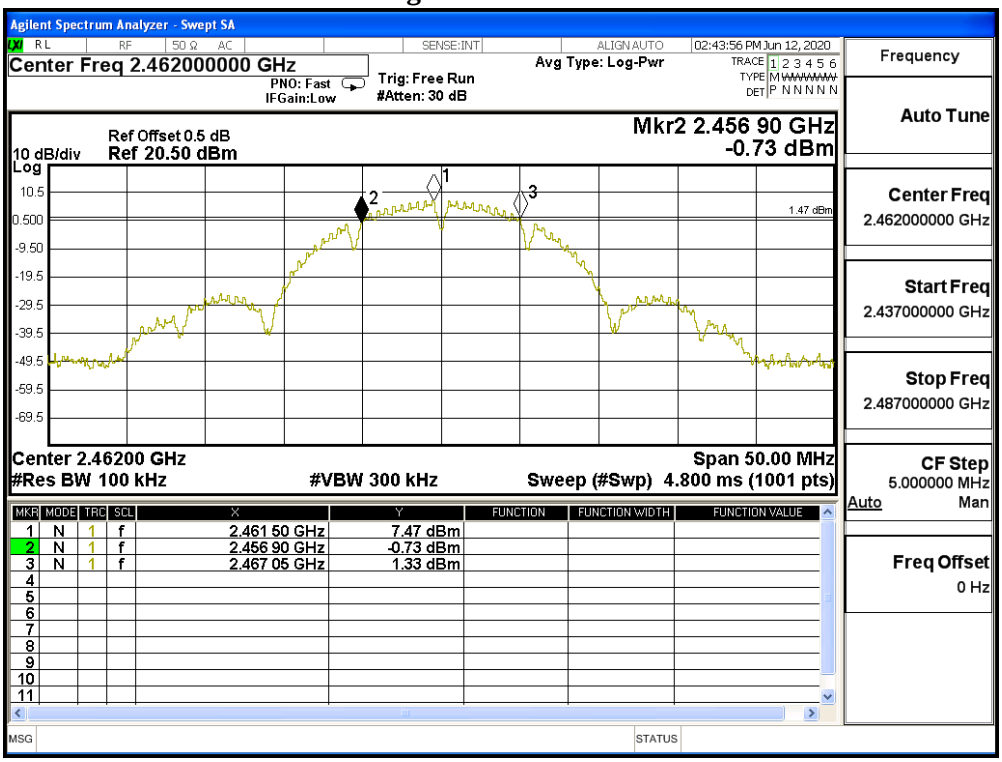


Figure Channel 11:



Product : IEEE802.11a/b/g/n 2.4+5GHz 1T1R Wi-Fi IoT Module
Test Item : 6dB Bandwidth Data
Test Mode : Mode 2: Transmit (802.11g 6Mbps)

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
01	2412	16450	>500	Pass
06	2437	16450	>500	Pass
11	2462	16450	>500	Pass

Figure Channel 01:

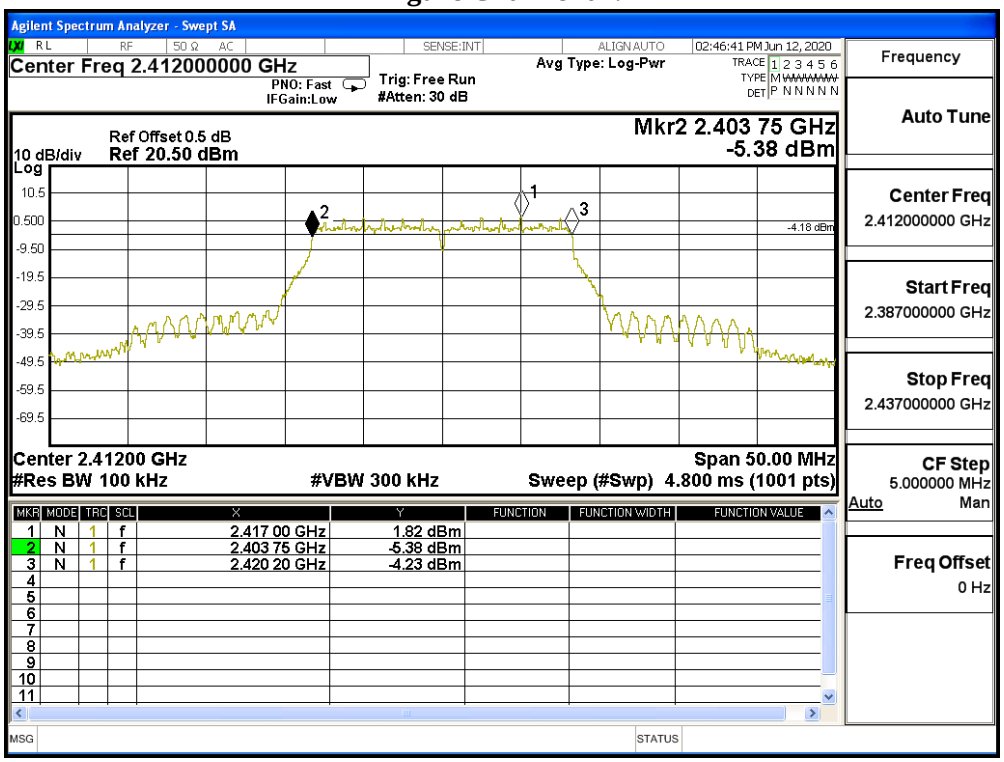


Figure Channel 06:

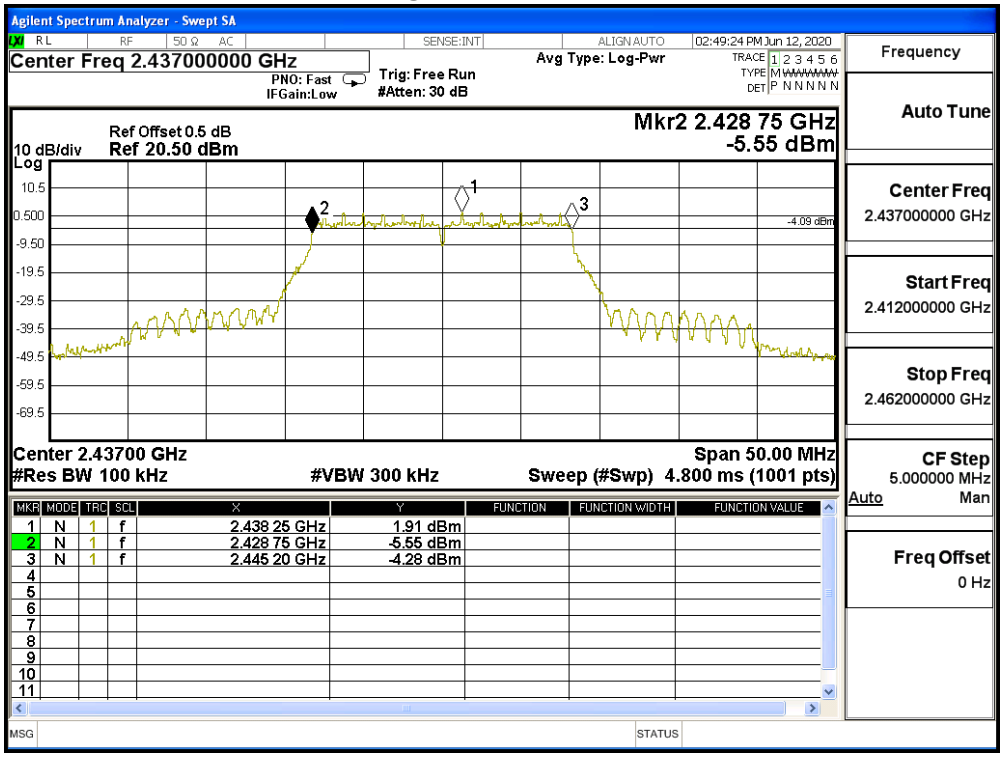
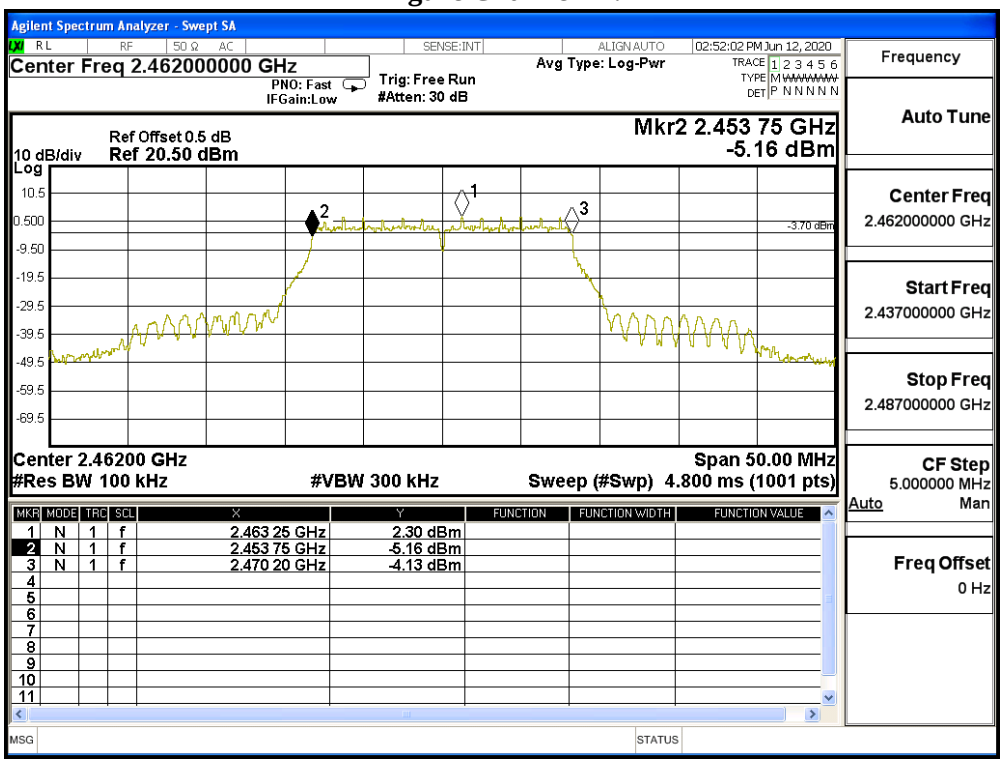


Figure Channel 11:



Product : IEEE802.11a/b/g/n 2.4+5GHz 1T1R Wi-Fi IoT Module
Test Item : 6dB Bandwidth Data
Test Mode : Mode 3: Transmit (802.11n MCS0 7.2Mbps 20M-BW)

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
01	2412	17700	>500	Pass
06	2437	17700	>500	Pass
11	2462	17700	>500	Pass

Figure Channel 01:

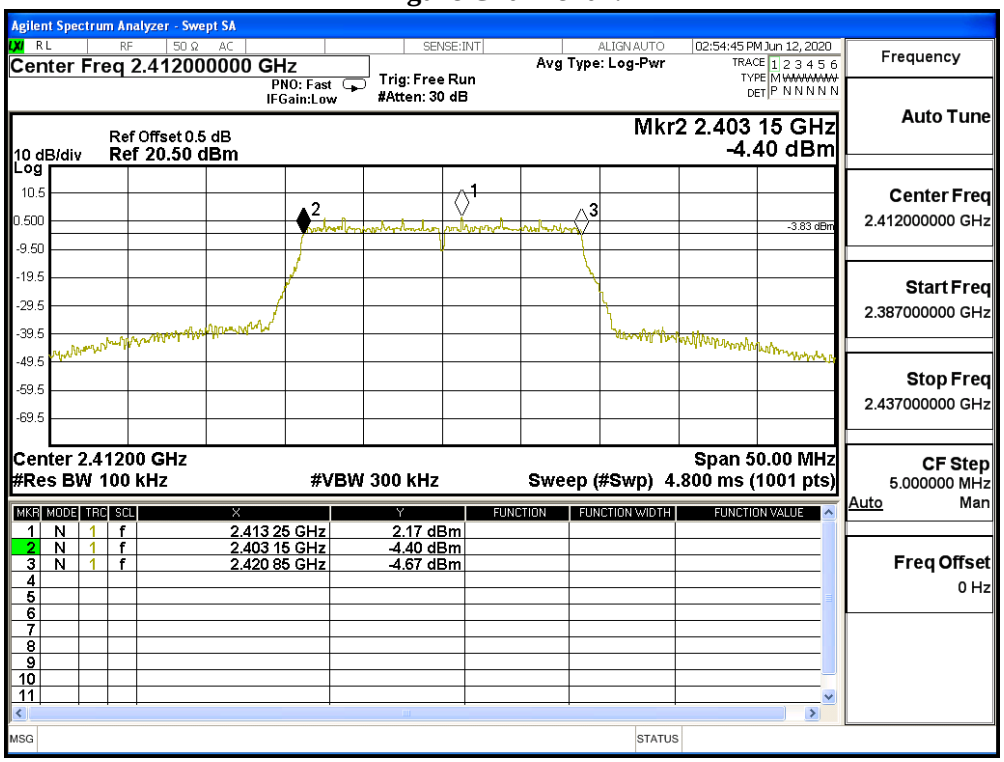


Figure Channel 06:

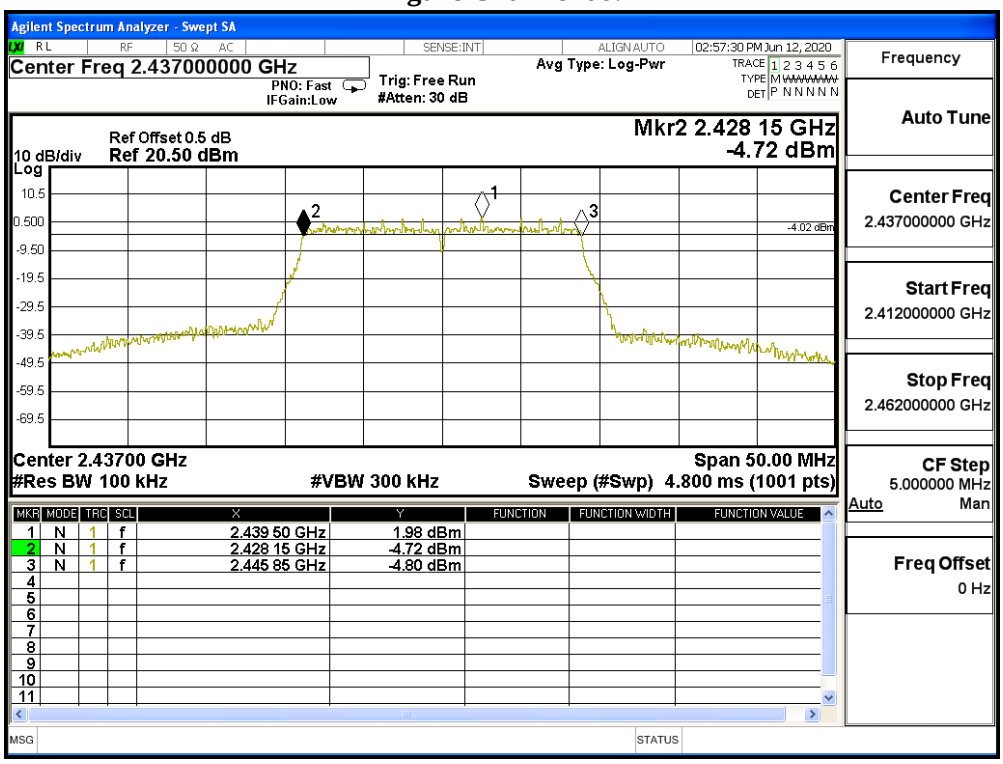
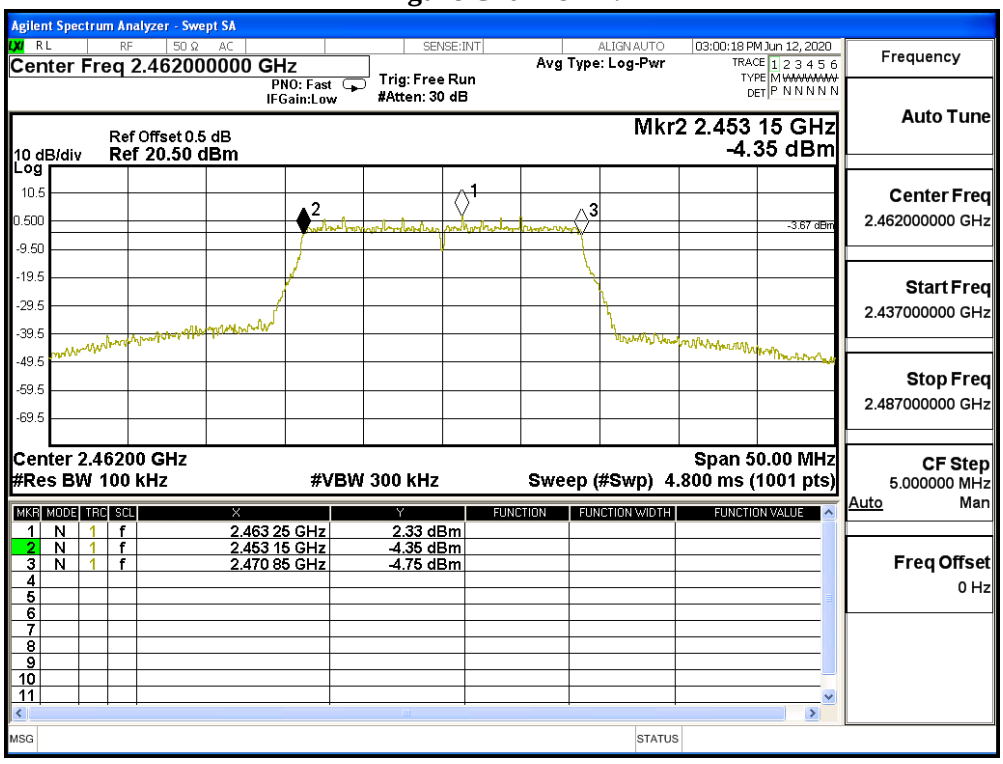


Figure Channel 11:



Product : IEEE802.11a/b/g/n 2.4+5GHz 1T1R Wi-Fi IoT Module
Test Item : 6dB Bandwidth Data
Test Mode : Mode 4: Transmit (802.11n MCS0 15Mbps 40M-BW)

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
03	2422	36600	>500	Pass
06	2437	36600	>500	Pass
09	2452	36600	>500	Pass

Figure Channel 03:

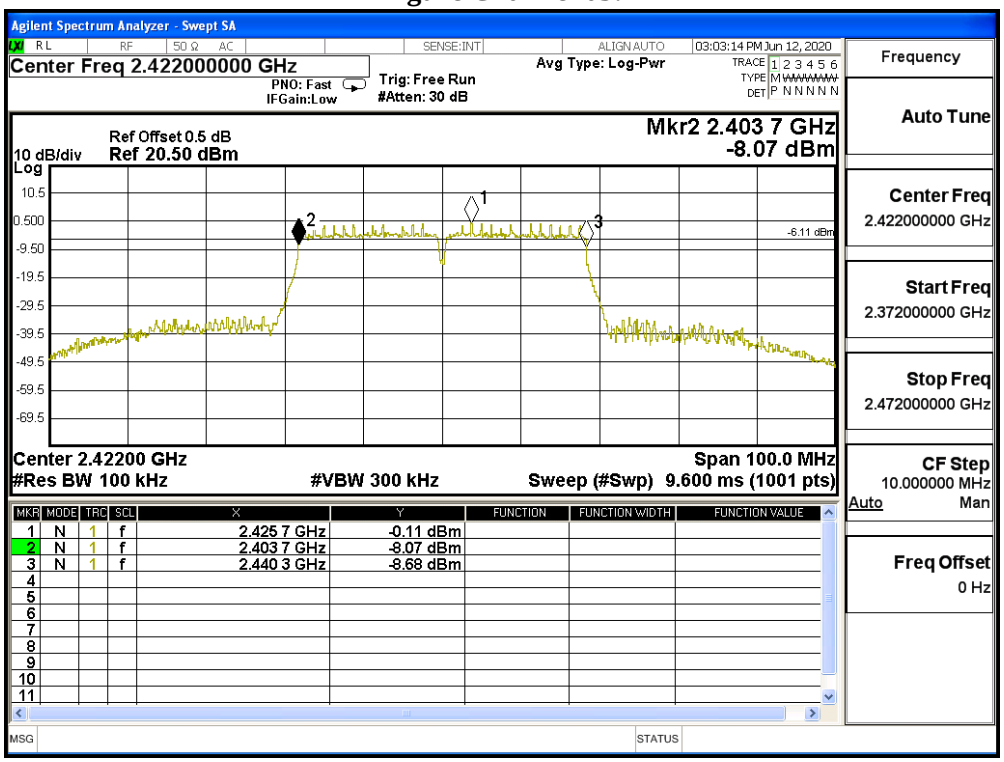


Figure Channel 06:

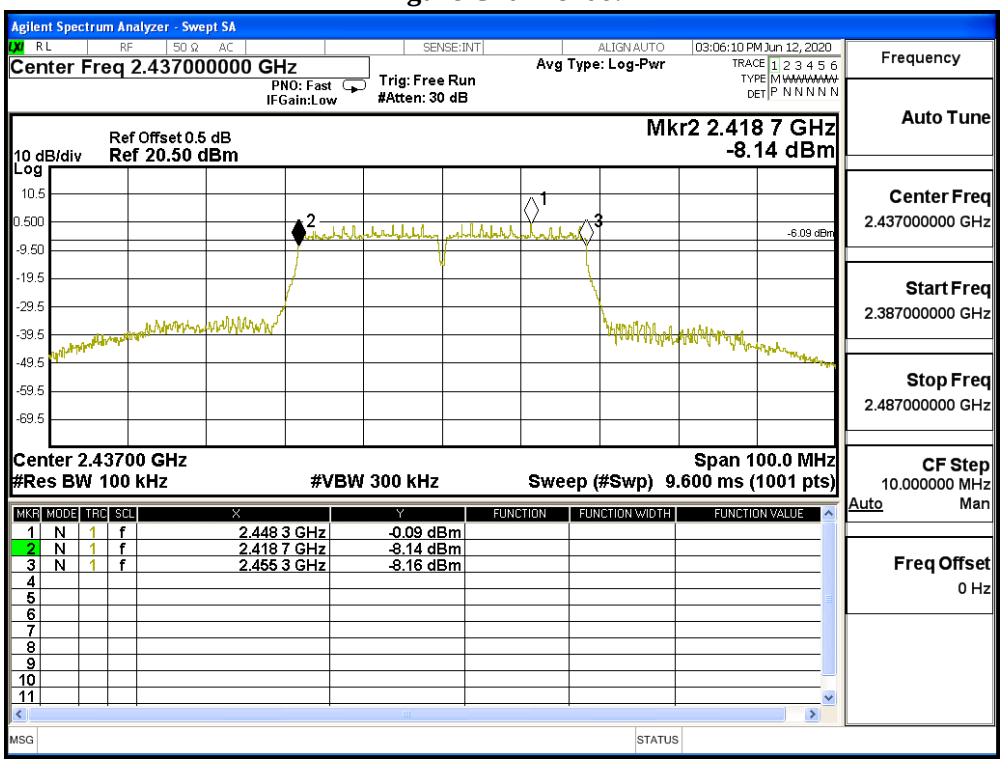
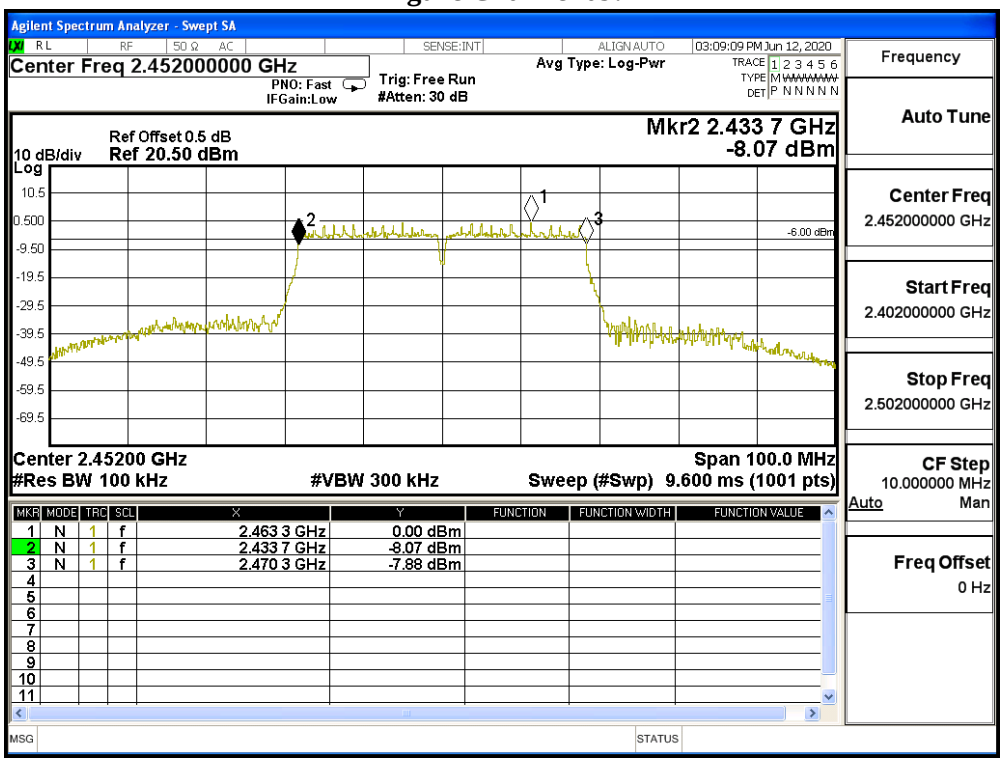
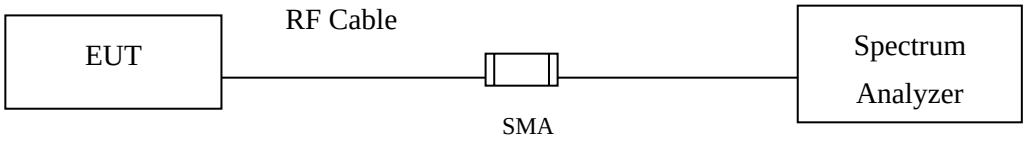


Figure Channel 09:



8. Power Density

8.1. Test Setup



8.2. Limits

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

8.4. Test Result of Power Density

Product : IEEE802.11a/b/g/n 2.4+5GHz 1T1R Wi-Fi IoT Module
Test Item : Power Density Data
Test Mode : Mode 1: Transmit (802.11b 1Mbps)

Channel No.	Frequency (MHz)	Measure Level (dBm)	Limit (dBm)	Result
01	2412	7.94	≦8dBm	Pass
06	2437	7.44	≦8dBm	Pass
11	2462	7.48	≦8dBm	Pass

Figure Channel 01:

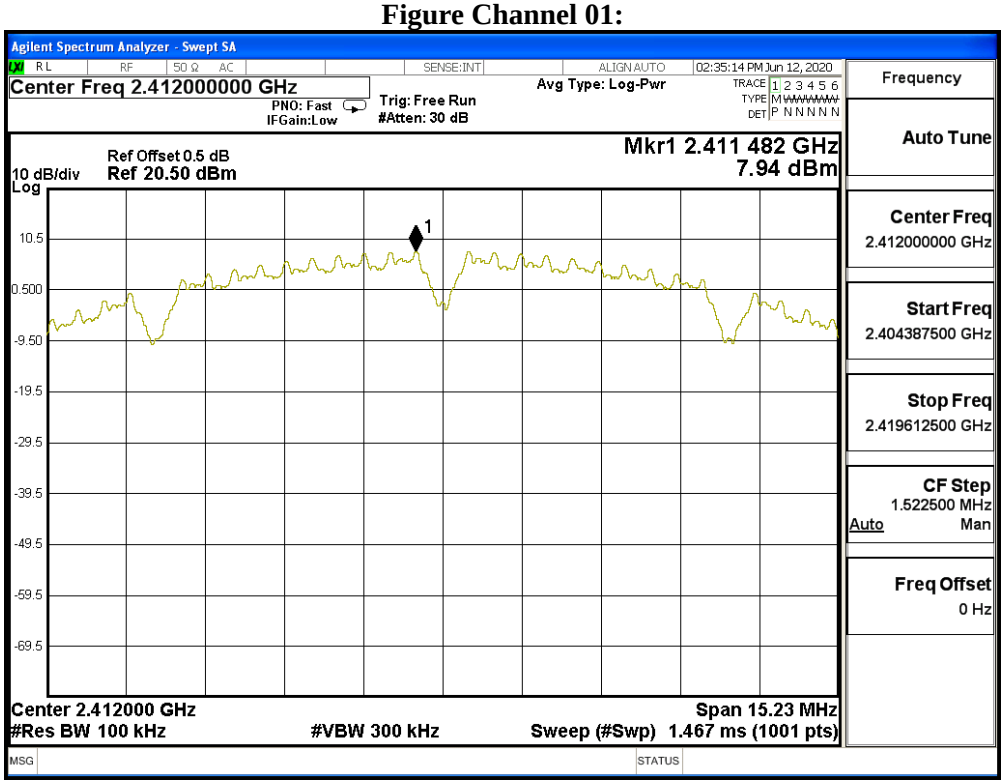


Figure Channel 06:

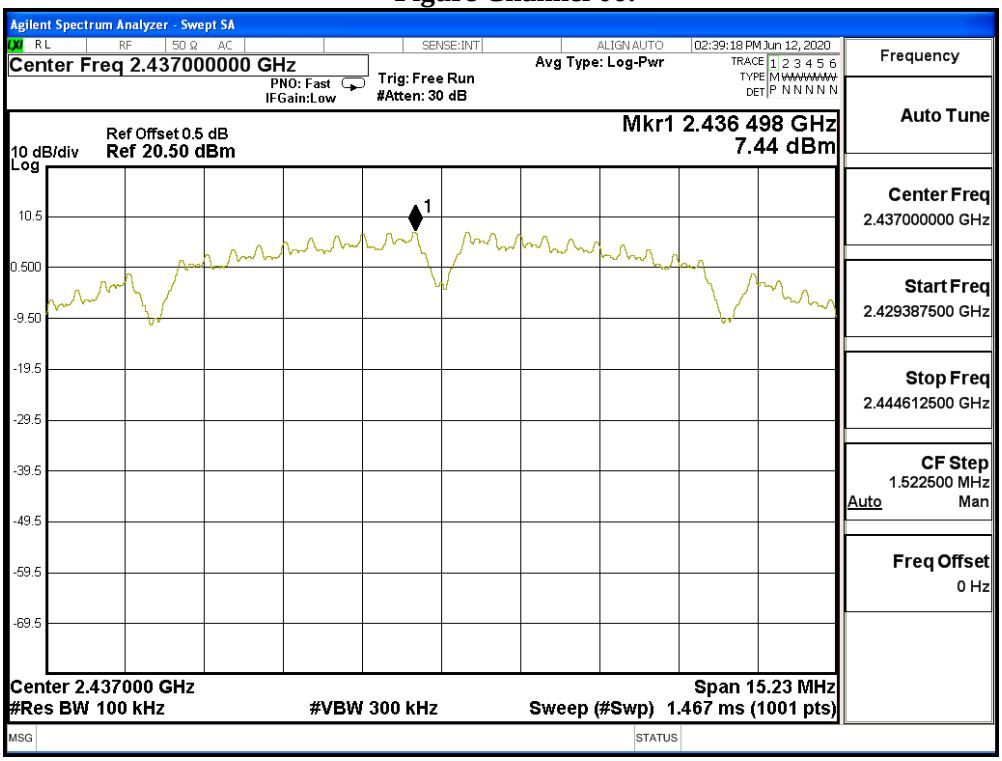
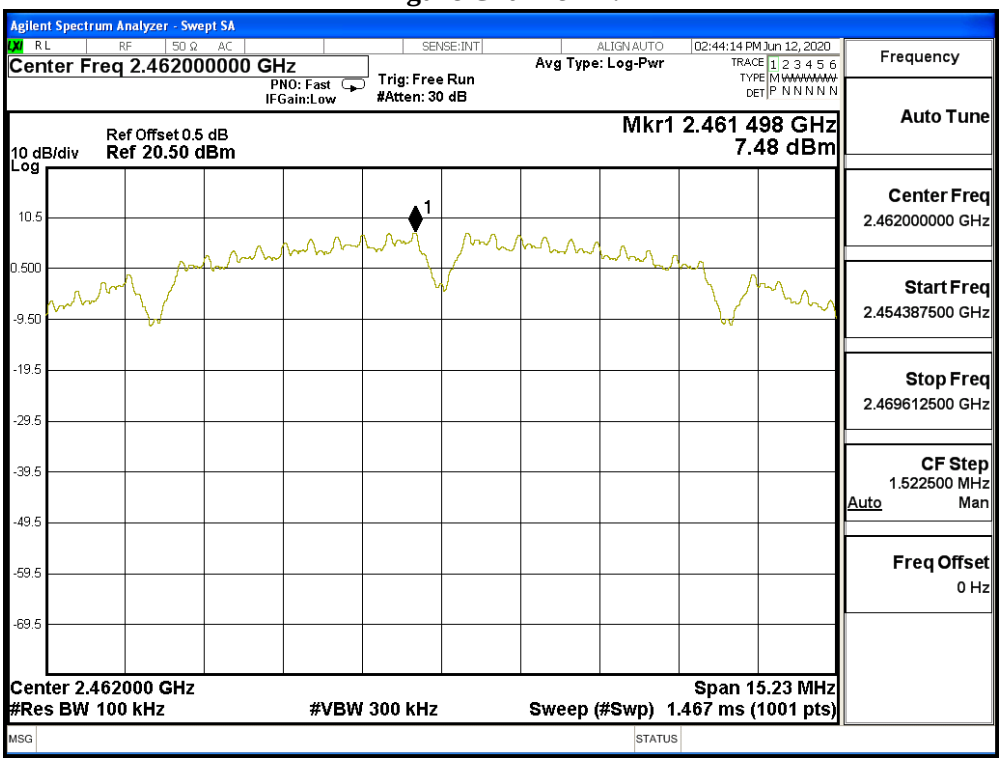


Figure Channel 11:



Product : IEEE802.11a/b/g/n 2.4+5GHz 1T1R Wi-Fi IoT Module
Test Item : Power Density Data
Test Mode : Mode 2: Transmit (802.11g 6Mbps)

Channel No.	Frequency (MHz)	Measure Level (dBm)	Limit (dBm)	Result
01	2412	2.08	≦8dBm	Pass
06	2437	1.62	≦8dBm	Pass
11	2462	2.32	≦8dBm	Pass

Figure Channel 01:

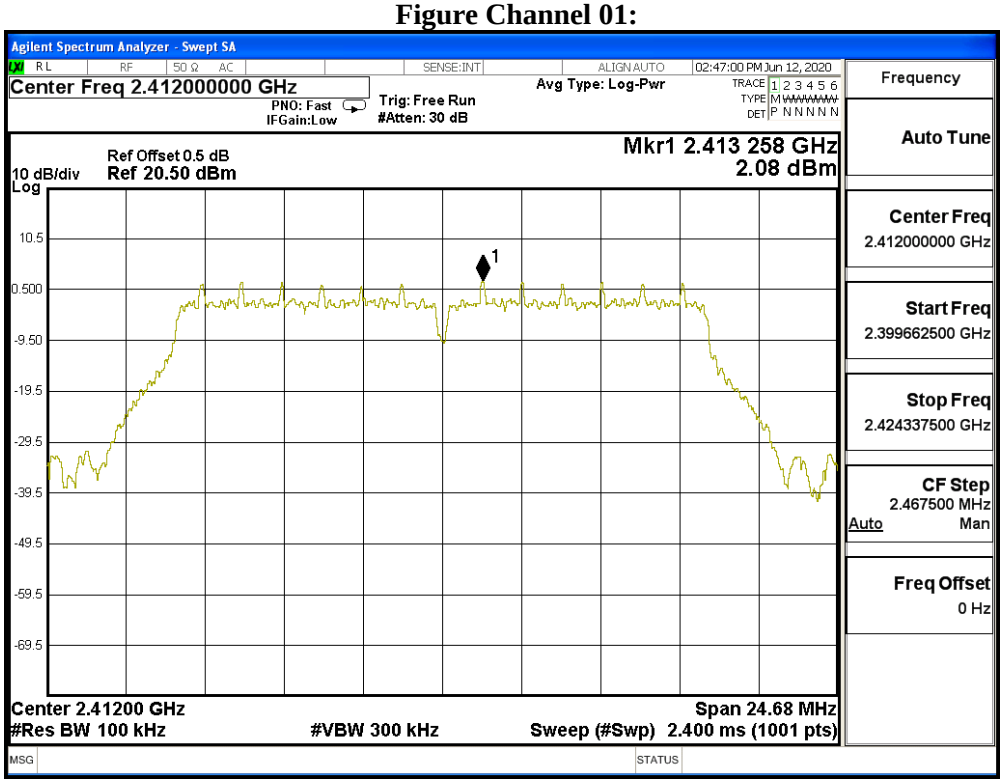


Figure Channel 06:

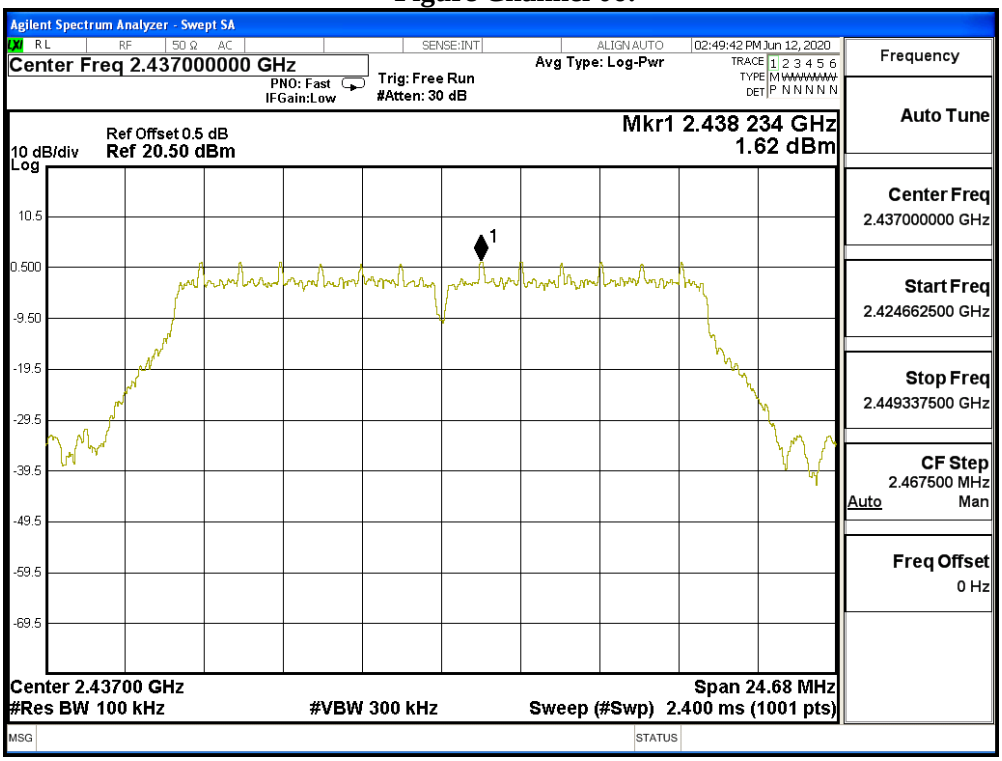
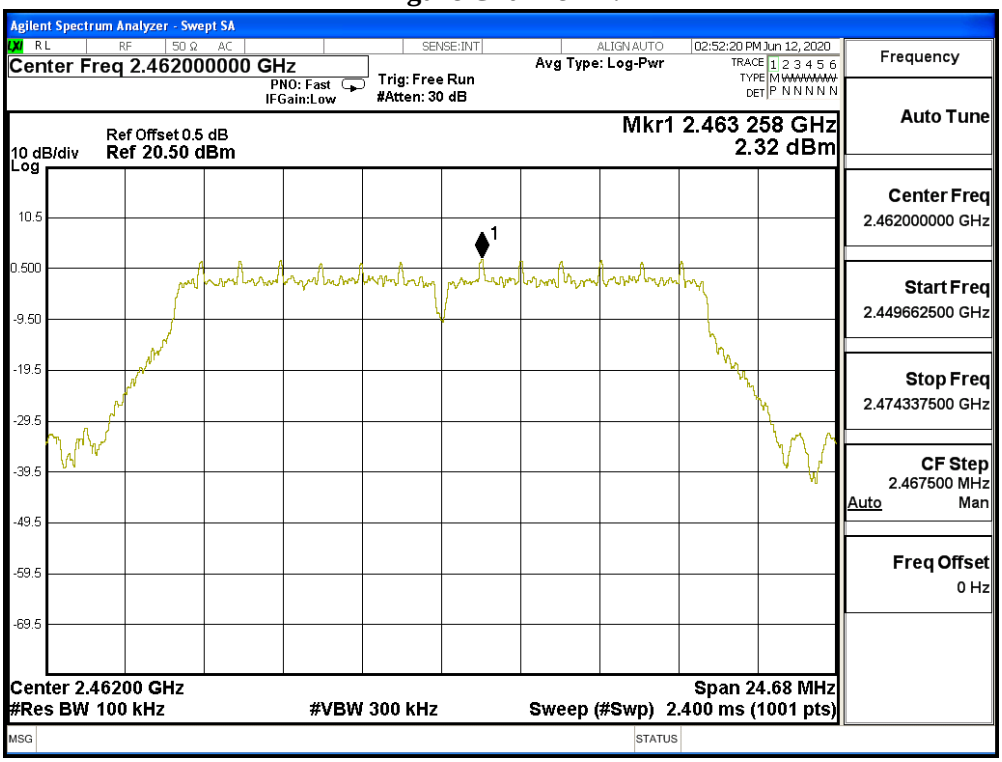


Figure Channel 11:



Product : IEEE802.11a/b/g/n 2.4+5GHz 1T1R Wi-Fi IoT Module
Test Item : Power Density Data
Test Mode : Mode 3: Transmit (802.11n MCS0 7.2Mbps 20M-BW)

Channel No.	Frequency (MHz)	Measure Level (dBm)	Limit (dBm)	Result
01	2412	2.24	≦8dBm	Pass
06	2437	2.26	≦8dBm	Pass
11	2462	2.09	≦8dBm	Pass

Figure Channel 01:

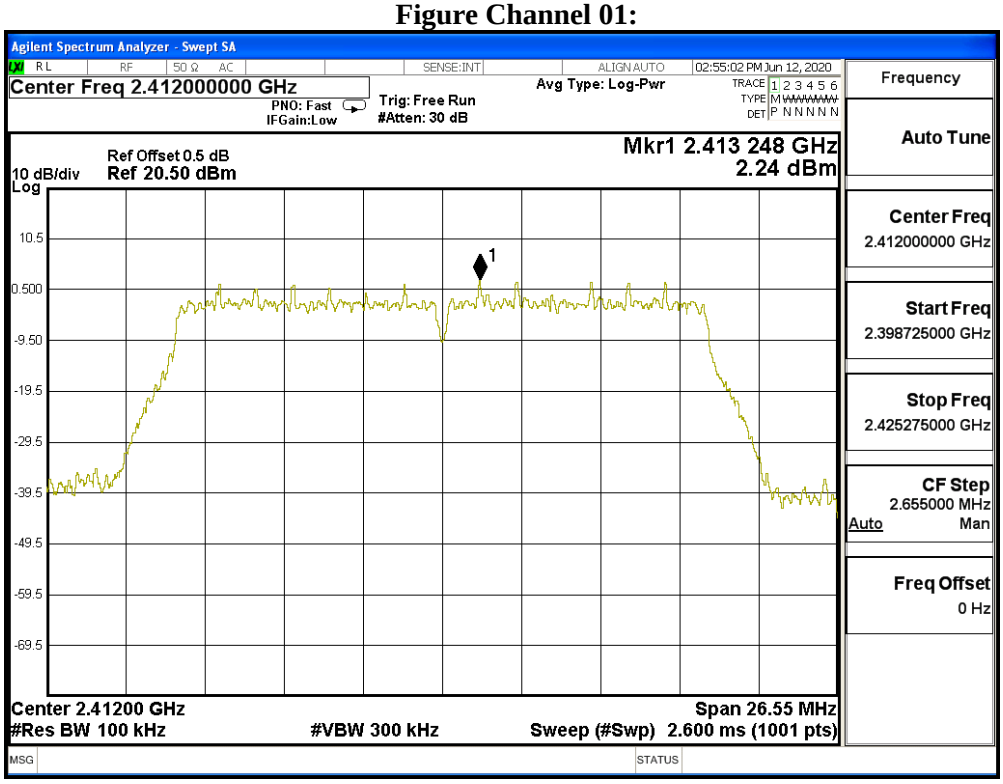


Figure Channel 06:

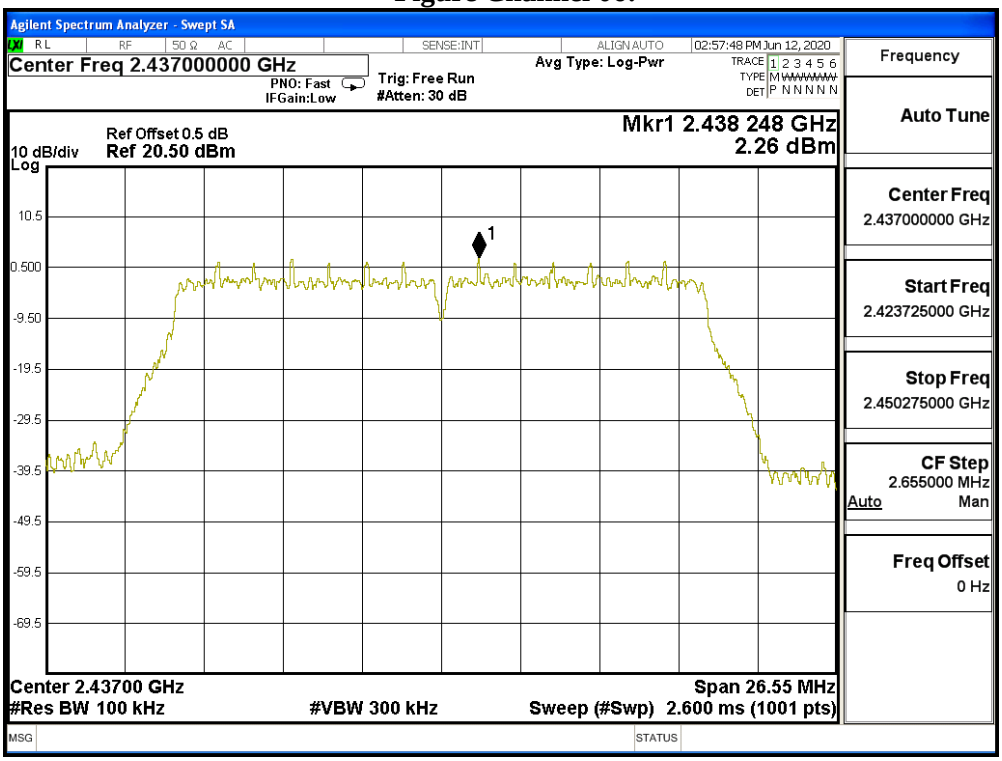
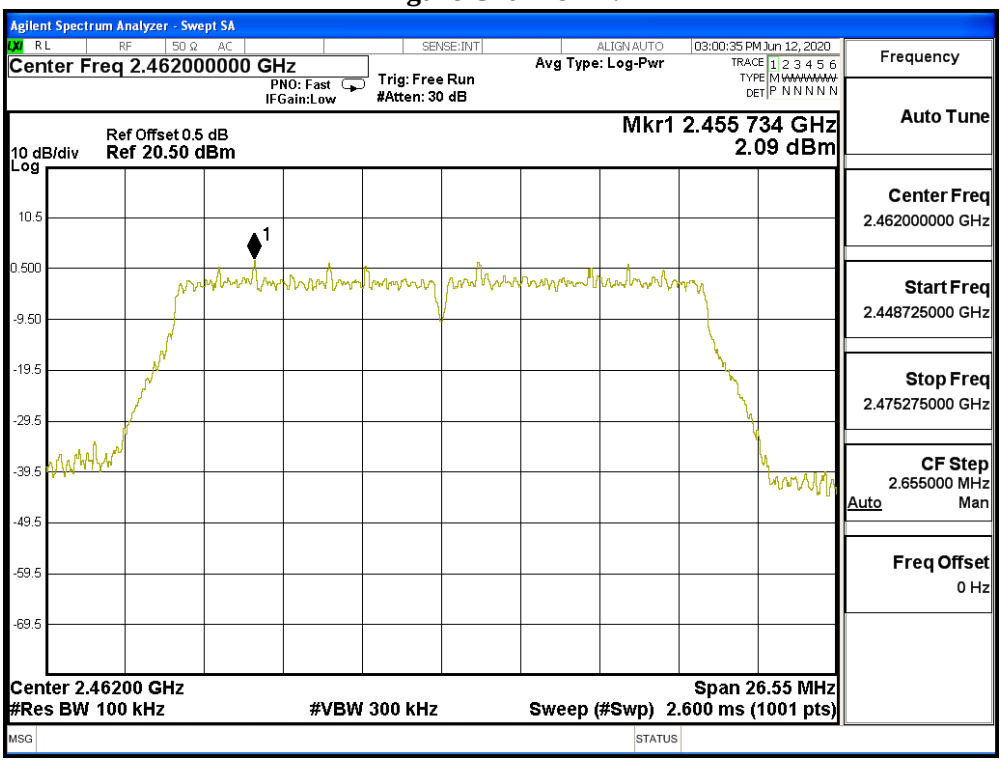


Figure Channel 11:



Product : IEEE802.11a/b/g/n 2.4+5GHz 1T1R Wi-Fi IoT Module
Test Item : Power Density Data
Test Mode : Mode 4: Transmit (802.11n MCS0 15Mbps 40M-BW)

Channel No.	Frequency (MHz)	Measure Level (dBm)	Limit (dBm)	Result
03	2422	-0.25	≦8dBm	Pass
06	2437	-0.24	≦8dBm	Pass
09	2452	-0.02	≦8dBm	Pass

Figure Channel 03:

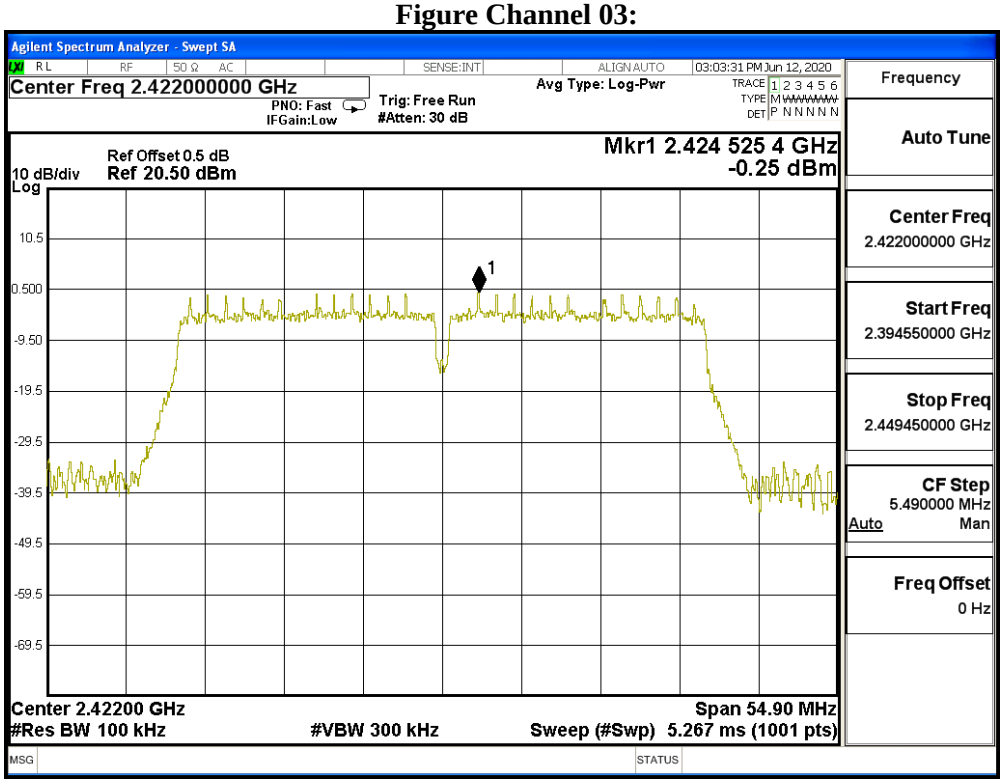


Figure Channel 06:

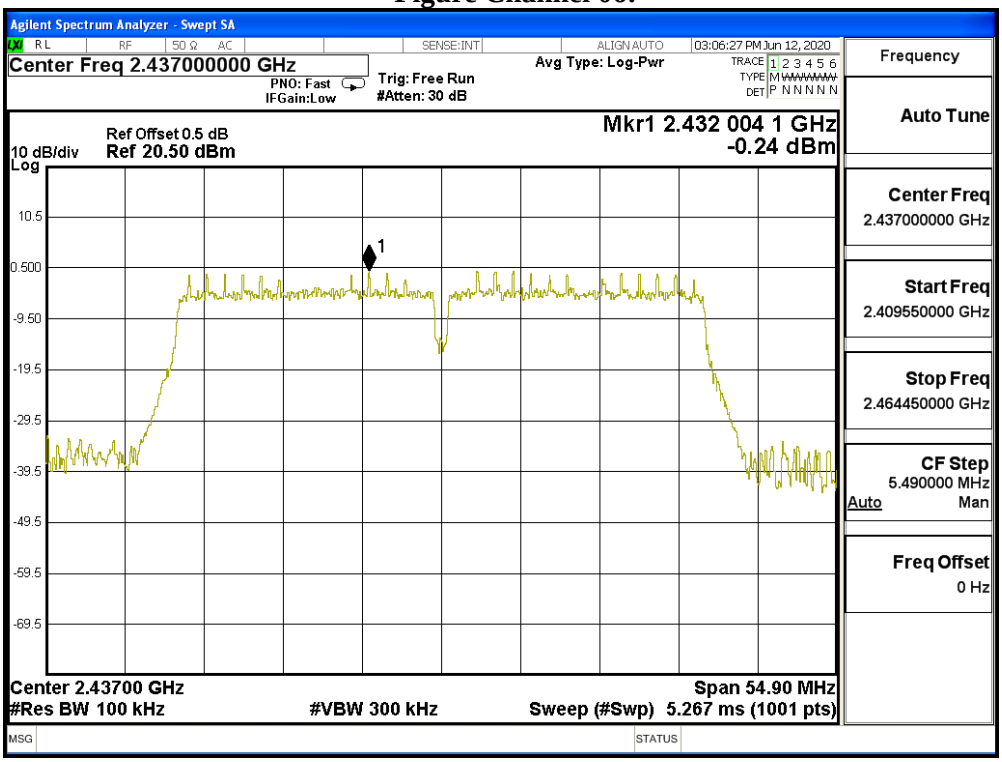
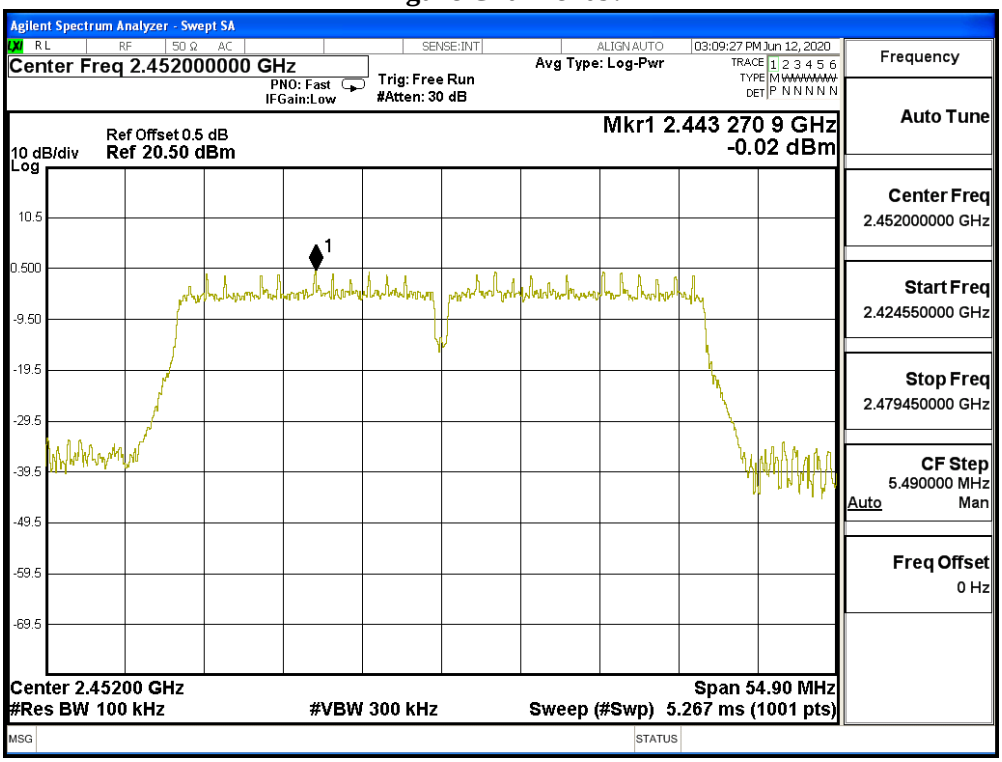
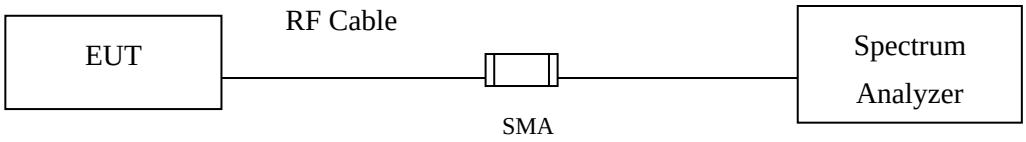


Figure Channel 09:



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 : IEEE802.11a/b/g/n 2.4+5GHz 1T1R Wi-Fi IoT Module
Test Item : Duty Cycle
Test Mode : Transmit

Duty Cycle Formula:

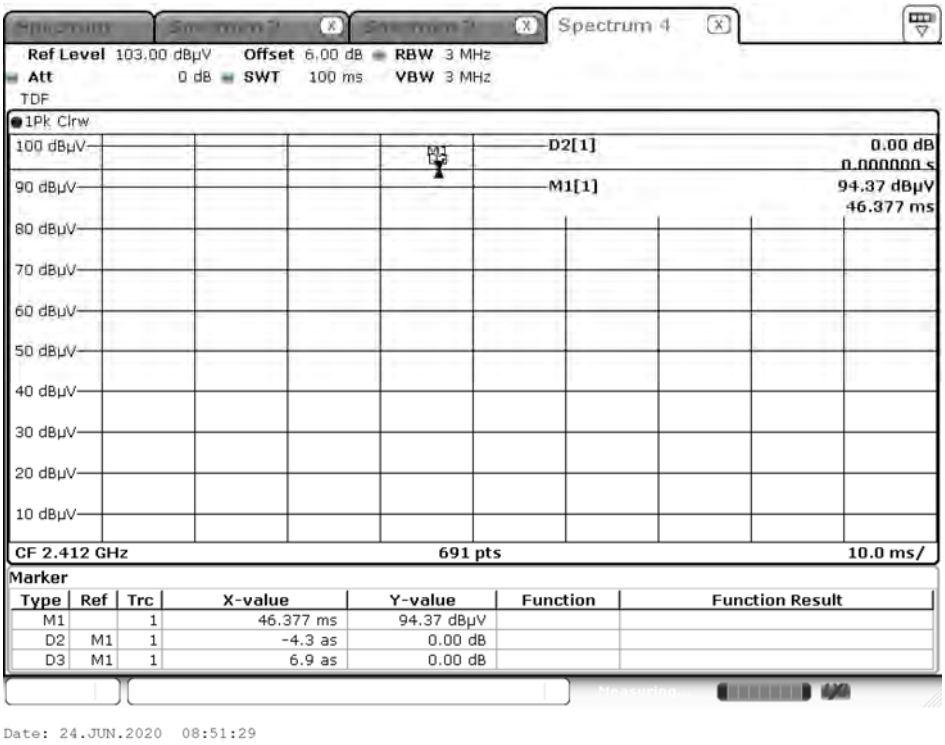
Duty Cycle = Ton / (Ton + Toff)

Duty Factor = 10 Log (1/Duty Cycle)

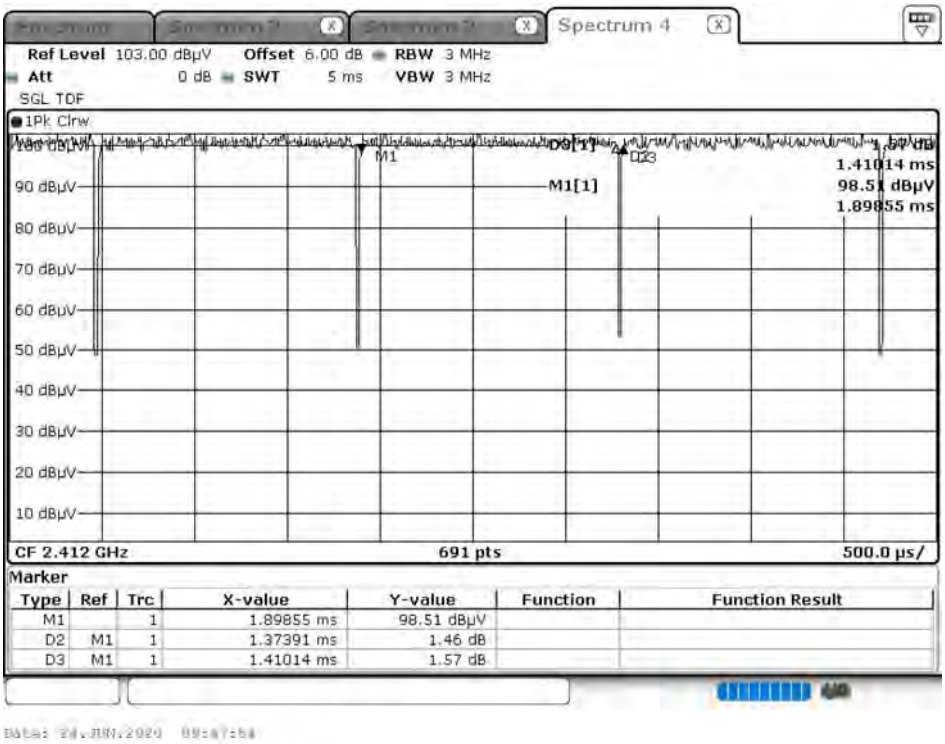
Results:

2.4GHz band	Ton (ms)	Ton + Toff (ms)	Duty Cycle (%)	Duty Factor (dB)
802.11b	--	--	100.00	--
802.11g	1.3739	1.4101	97.43	0.11
802.11n20	5.0826	5.1028	99.60	0.02
802.11n40	2.4348	2.4855	97.96	0.09

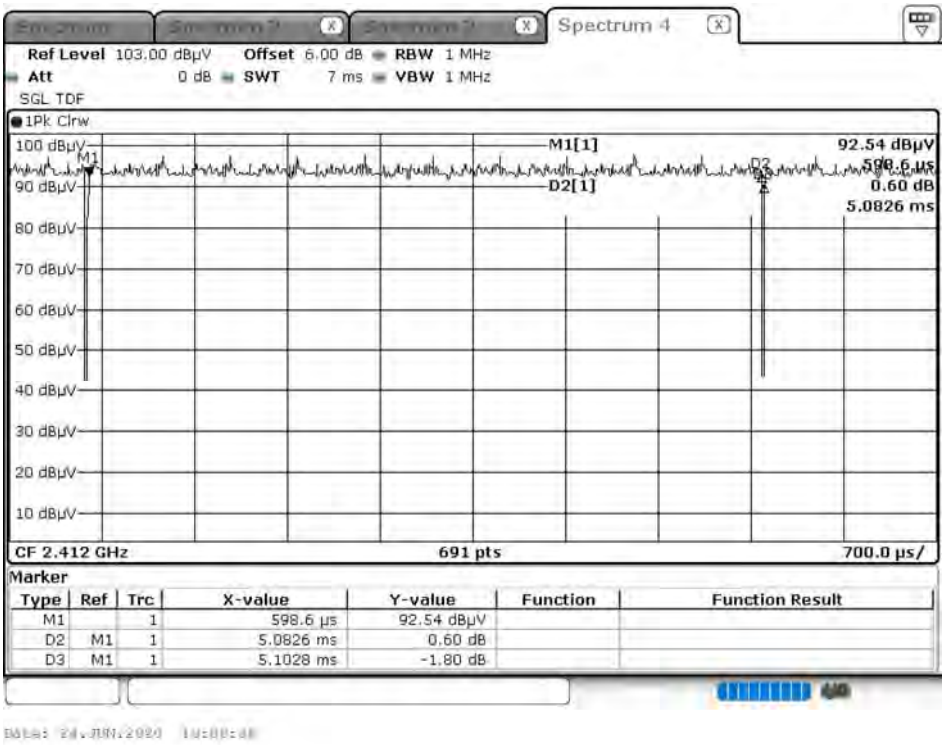
802.11b



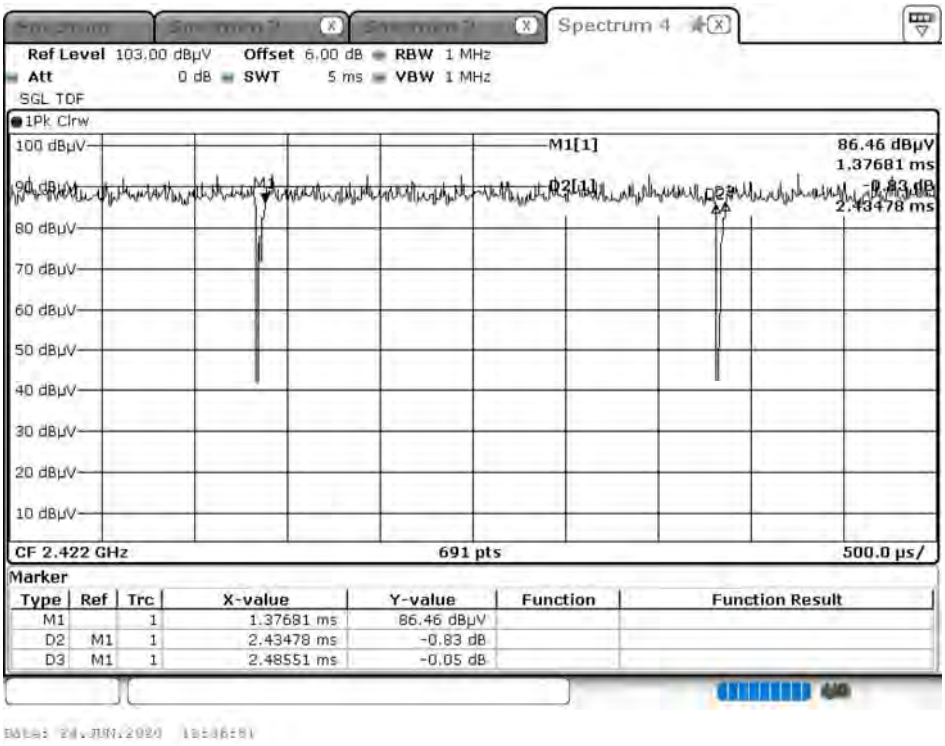
802.11g



802.11n20



802.11n40


Spectrum 4
Ref Level 103.00 dBµV Offset 6.00 dB RBW 1 MHz
Att 0 dB SWT 5 ms VBW 1 MHz
SGL TDF
1Pk Clrw
M1[1] 86.46 dBµV
1.37681 ms
D2[1] -0.83 dB
2.43478 ms
100 dBµV
90 dBµV
80 dBµV
70 dBµV
60 dBµV
50 dBµV
40 dBµV
30 dBµV
20 dBµV
10 dBµV
CF 2.422 GHz
691 pts
500.0 µs/
Marker
Type Ref Trc X-value Y-value Function Function Result
M1 1 1.37681 ms 86.46 dBµV
D2 M1 1 2.43478 ms -0.83 dB
D3 M1 1 2.48551 ms -0.05 dB

10. EMI Reduction Method During Compliance Testing

No modification was made during testing.