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Report No.: 2502TW0106-U3
Report Version: 1.0
Issue Date: 2025-03-14

MEASUREMENT REPORT

FCC ID : VW3FAST5297

APPLICANT : SAGEMCOM BROADBAND SAS

Application Type : Certification

Product : WiFi 7 Router

Model No. : SBE1V1X

Brand Name : Sagemcom

FCC Classification : Digital Transmission System (DTS)

FCC Rule Part(s) : Part 15.247

Test Procedure(s) : ANSI C63.10-2013

Received Date : February 12, 2025

Test Date : February 14, 2025~March 3, 2025

Tested By : *Kaunaz Lee*
(Kaunaz Lee)



Reviewed By : *Paddy Chen*
(Paddy Chen)

Approved By : *Chenz Ker*
(Chenz Ker)

The test results only relate to the tested sample.

This equipment has been shown to be capable of compliance with the applicable technical standards as indicated in the measurement report and was tested in accordance with the measurement procedures specified in ANSI C63.10. Test results reported herein relate only to the item(s) tested.

The test report shall not be reproduced except in full without the written approval of MRT Technology (Taiwan) Co., Ltd.

Revision History

Report No.	Version	Description	Issue Date	Note
2502TW0106-U3	1.0	Original Report	2025-03-14	

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General Information

Applicant	SAGEMCOM BROADBAND SAS
Applicant Address	4 ALLEE DES MESSAGERIES 92271 BOIS-COLOMBES CEDEX - FRANCE
Manufacturer	SAGEMCOM BROADBAND SAS
Manufacturer Address	4 ALLEE DES MESSAGERIES 92271 BOIS-COLOMBES CEDEX - FRANCE
Test Site	MRT Technology (Taiwan) Co., Ltd
Test Site Address	No. 38, Fuxing Second Rd., Guishan Dist., Taoyuan City 333, Taiwan (R.O.C)
MRT FCC Registration No.	291082
FCC Rule Part(s)	Part 15.247

Test Facility / Accreditations

1. MRT facility is a FCC registered (Reg. No. 291082) test facility with the site description report on file and is designated by the FCC as an Accredited Test Firm.
2. MRT facility is an IC registered (MRT Reg. No. 21723) test laboratory with the site description on file at Industry Canada.
3. MRT Lab is accredited to ISO 17025 by the Taiwan Accreditation Foundation (TAF Cert. No. 3261) in EMC, Telecommunications and Radio testing for FCC (Designation Number: TW3261), Industry Canada, EU and TELEC Rules.

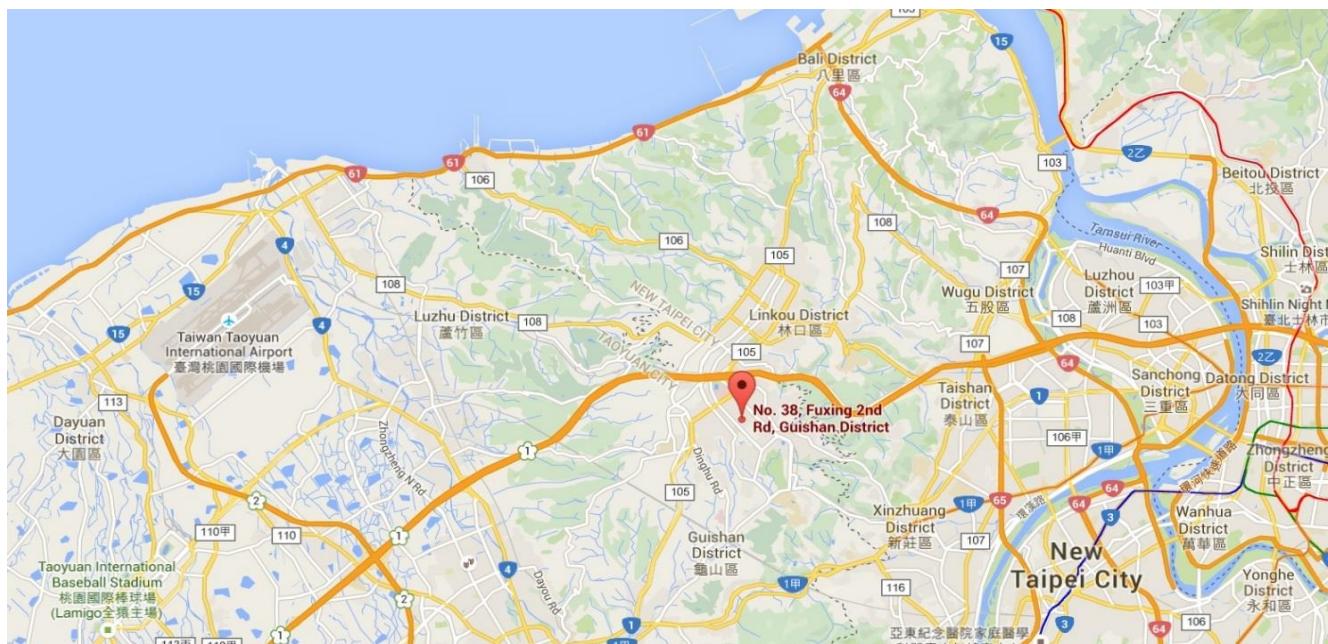
1. INTRODUCTION

1.1. Scope

Measurement and determination of electromagnetic emissions (EMC) of radio frequency devices including intentional and/or unintentional radiators for compliance with the technical rules and regulations of the Federal Communications Commission and the Industry Canada Certification and Engineering Bureau.

1.2. MRT Test Location

The map below shows the location of the MRT LABORATORY, its proximity to the Taoyuan City. These measurement tests were conducted at the MRT Technology (Taiwan) Co., Ltd. Facility located at No.38, Fuxing 2nd Rd., Guishan Dist., Taoyuan City 33377, Taiwan (R.O.C).



2. PRODUCT INFORMATION

2.1. Equipment Description

Product Name	WiFi 7 Router
Brand Name	Sagemcom
Model No.	SBE1V1X
Thread/Zigbee Specification	IEEE 802.15.4 / ZigBee /Thread
EUT Identification No.:	#1-1 (Conducted) #1-2 (Radiated)
Accessory	
Power Adapter	Brand: NetBit Model No: NBC42B120350VU Input: AC 100-120V~, 50-60Hz, 1.0A Output: 12.0V=3.5A DC Cable Out: Non-Shielded, 1.8m

2.2. Product Specification Subjective to this Standard

Operating Frequency	2405~2480MHz
Type of modulation	O-QPSK

Antenna List

No.	Manufacturer	Part No.	Antenna Type	Peak Gain
1	GALTRONICS	7979	PCB	3.69dBi

2.3. Test Mode

Test Mode	Mode 1: Transmit - ZigBee (O-QPSK)
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Note: Regarding to the operation frequency, the lowest, middle and highest frequency are selected to perform the test.

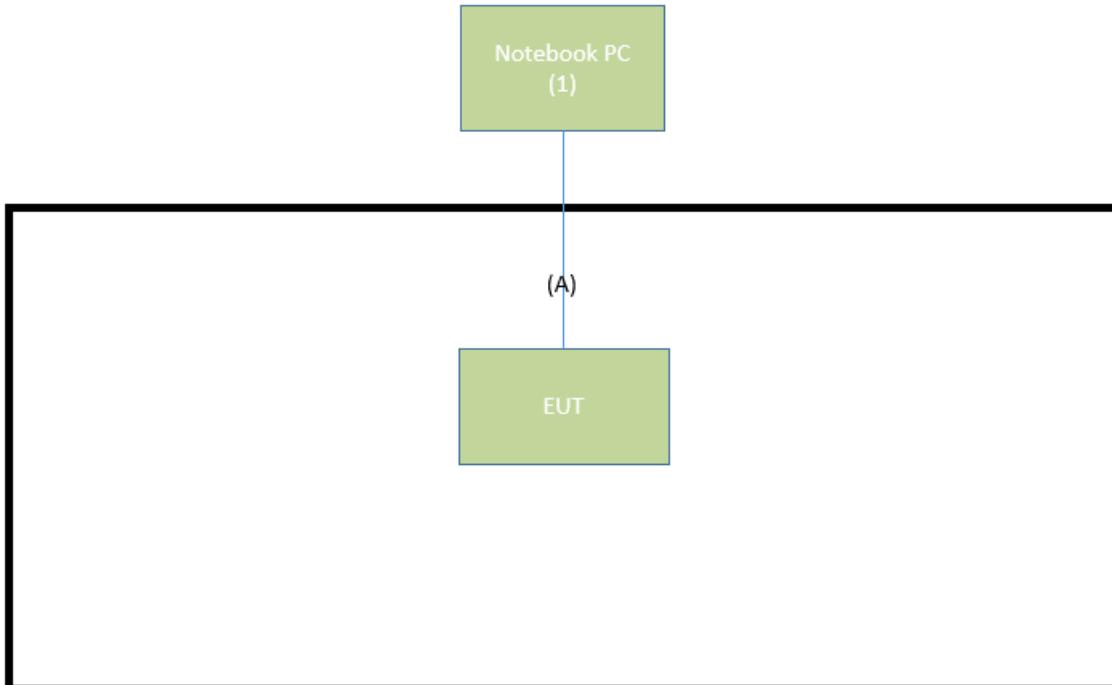
2.4. Operation Frequency / Channel List

Channel	Frequency	Channel	Frequency
11	2405 MHz	19	2445 MHz
12	2410 MHz	20	2450 MHz
13	2415 MHz	21	2455 MHz
14	2420 MHz	22	2460 MHz
15	2425 MHz	23	2465 MHz
16	2430 MHz	24	2470 MHz
17	2435 MHz	25	2475 MHz
18	2440 MHz	26	2480 MHz

2.5. Test Configuration

This device was tested per the guidance of ANSI C63.10-2013. ANSI C63.10-2013 was used to reference the appropriate EUT setup for radiated spurious emissions testing and AC line conducted testing.

Connection Diagram



Signal Cable Type	Signal Cable Description
A	Lan Cable

2.6. Test System Details

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

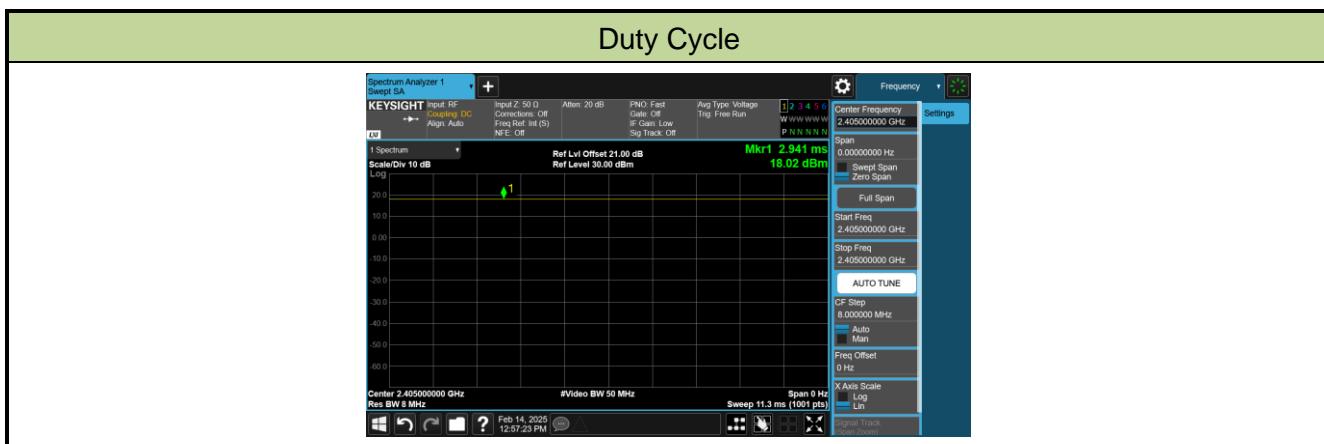
No.	Product	Brand	Model No.	Serial No.	Power Cord
1	Notebook PC	Lenovo	21DH00A3TW	N/A	Non-shielded, 0.8m

2.7. Test Software

The test utility software used during testing was “Tera Term”.

2.8. Duty Cycle

Test Mode	Duty Cycle
ZigBee	100.00%



2.9. EMI Suppression Device(s)/Modifications

No EMI suppression device(s) were added and/or no modifications were made during testing.

2.10. Labeling Requirements

Per 2.1074 & 15.19; Docket 95-19

The label shall be permanently affixed at a conspicuous location on the device; instruction manual or pamphlet supplied to the user and be readily visible to the purchaser at the time of purchase.

However, when the device is so small wherein placement of the label with specified statement is not practical, only the FCC ID must be displayed on the device per Section 15.19(a)(5). Please see attachment for FCC ID label and label location.

3. DESCRIPTION of TEST

3.1. Evaluation Procedure

The measurement procedures described in the American National Standard for Testing Unlicensed Wireless Devices (ANSI C63.10-2013) was used in the measurement.

3.2. AC Line Conducted Emissions

The line-conducted facility is located inside an 9'x4'x3' shielded enclosure. A 1m x 2m wooden table 80cm high is placed 40cm away from the vertical wall and 80cm away from the sidewall of the shielded room. Two 10kHz-30MHz, 50Ω/50uH Line-Impedance Stabilization Networks (LISNs) are bonded to the shielded room floor. Power to the LISNs is filtered by external high-current high-insertion loss power line filters. These filters attenuate ambient signal noise from entering the measurement lines. These filters are also bonded to the shielded enclosure.

The EUT is powered from one LISN and the support equipment is powered from the second LISN. All interconnecting cables more than 1 meter were shortened to a 1 meter length by non-inductive bundling (serpentine fashion) and draped over the back edge of the test table. All cables were at least 40cm above the horizontal reference ground-plane. Power cables for support equipment were routed down to the second LISN while ensuring that that cables were not draped over the second LISN.

Sufficient time for the EUT, support equipment, and test equipment was allowed in order for them to warm up to their normal operating condition. The RF output of the LISN was connected to the receiver and exploratory measurements were made to determine the frequencies producing the maximum emission from the EUT. The receiver was scanned from 150kHz to 30MHz. The detector function was set to peak mode for exploratory measurements while the bandwidth of the analyzer was set to 9kHz. The EUT, support equipment, and interconnecting cables were arranged and manipulated to maximize each emission. Each emission was also maximized by varying: power lines, the mode of operation or data exchange speed, or support equipment which determined the worst-case emission. Once the worst case emissions have been identified, the one EUT cable configuration/arrangement and mode of operation that produced these emissions are used for final measurements on the same test site. The analyzer is set to CISPR quasi-peak and average detectors with a 9kHz resolution bandwidth for final measurements.

An extension cord was used to connect to a single LISN which powered by EUT. The extension cord was calibrated with LISN, the impedance and insertion loss are compliance with the requirements as stated in ANSI C63.10-2013.

Line conducted emissions test results are shown in Section 7.8.

3.3. Radiated Emissions

The radiated test facilities consisted of an indoor 3 meter semi-anechoic chamber used for final measurements and exploratory measurements, when necessary. The measurement area is contained within the semi-anechoic chamber which is shielded from any ambient interference. For measurements above 1GHz absorbers are arranged on the floor between the turn table and the antenna mast in such a way so as to maximize the reduction of reflections. For measurements below 1GHz, the absorbers are removed. A MF Model 210SS turntable is used for radiated measurement. It is a continuously rotatable, remote controlled, metallic turntable and 2 meters (6.56 ft.) in diameter. The turn table is flush with the raised floor of the chamber in order to maintain its function as a ground plane. An 80cm high PVC support structure is placed on top of the turntable. For all measurements, the spectrum was scanned through all EUT azimuths and from 1 to 4 meter receive antenna height using a broadband antenna from 30MHz up to the upper frequency shown in 15.33(b)(1) depending on the highest frequency generated or used in the device or on which the device operates or tunes. For frequencies above 1GHz, linearly polarized double ridge horn antennas were used. For frequencies below 30MHz, a calibrated loop antenna was used. When exploratory measurements were necessary, they were performed at 1 meter test distance inside the semi-anechoic chamber using broadband antennas, broadband amplifiers, and spectrum analyzers to determine the frequencies and modes producing the maximum emissions. Sufficient time for the EUT, support equipment, and test equipment was allowed in order for them to warm up to their normal operating condition. The test set-up for frequencies below 1GHz was placed on top of the 0.8 meter high, 1 x 1.5 meter table; and test set-up for frequencies 1-40GHz was placed on top of the 1.5 meter high, 1 x 1.5 meter table. The EUT, support equipment, and interconnecting cables were arranged and manipulated to maximize each emission. Appropriate precaution was taken to ensure that all emissions from the EUT were maximized and investigated. The system configuration, clock speed, mode of operation or video resolution, if applicable, turntable azimuth, and receive antenna height was noted for each frequency found.

Final measurements were made in the semi-anechoic chamber using calibrated, linearly polarized broadband and horn antennas. The test setup was configured to the setup that produced the worst case emissions. The spectrum analyzer was set to investigate all frequencies required for testing to compare the highest radiated disturbances with respect to the specified limits. The turntable containing the EUT was rotated through 360 degrees and the height of the receive antenna was varied 1 to 4 meters and stopped at the azimuth and height producing the maximum emission. Each emission was maximized by changing the orientation of the EUT through three orthogonal planes and changing the polarity of the receive antenna, which produced the worst-case emissions. According to 3dB Beam-Width of horn antenna, the horn antenna should be always directed to the EUT when rising height.

Radiated emissions test results are shown in Section 7.6 & 7.7 .

4. ANTENNA REQUIREMENTS

Excerpt from §15.203 of the FCC Rules/Regulations:

"An intentional radiator antenna shall be designed to ensure that no antenna other than that furnished by the responsible party can be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section."

- The antenna of the **WiFi 7 Router**, is permanently attached.
- There are no provisions for connection to an external antenna.

Conclusion:

The EUT unit complies with the requirement of §15.203.

5. TEST EQUIPMENT CALIBRATION DATE

Conducted Emissions

Instrument	Manufacturer	Type No.	Asset No.	Cali. Interval	Cali. Due Date
Two-Line V-Network	R&S	ENV216	MRTTWA00020	1 year	2025/4/21
EMI Test Receiver	R&S	ESR3	MRTTWA00009	1 year	2025/3/5
EMI Test Receiver	R&S	ESR3	MRTTWA00009	1 year	2026/3/4
Cable	Rosnol	N1C50-RG400-B 1C50-500CM	MRTTWE00013	1 year	2025/6/14

Radiated Emissions

Instrument	Manufacturer	Type No.	Asset No.	Cali. Interval	Cali. Due Date
Active Loop Antenna	SCHWARZBECK	FMZB 1519B	MRTTWA00002	1 year	2025/5/7
Broadband TRILOG Antenna	SCHWARZBECK	VULB 9162	MRTTWA00086	1 year	2025/11/5
Broadband Hornantenna	SCHWARZBECK	BBHA 9120D	MRTTWA00003	1 year	2026/2/11
Broadband Preamplifier	SCHWARZBECK	BBV 9718	MRTTWA00005	1 year	2026/2/11
Breitband Hornantenna	SCHWARZBECK	BBHA 9170	MRTTWA00004	1 year	2025/3/26
Broadband Amplifier	SCHWARZBECK	BBV 9721	MRTTWA00006	1 year	2025/3/21
EMI Test Receiver	R&S	ESR3	MRTTWA00009	1 year	2025/3/5
EMI Test Receiver	R&S	ESR3	MRTTWA00009	1 year	2026/3/4
Signal Analyzer	R&S	FSV40	MRTTWA00007	1 year	2025/3/14
Antenna Cable	HUBERSUHNER	SF106	MRTTWE00010	1 year	2025/6/14
Cable	Rosnol	K1K50-UP0264- K1K50-4M	MRTTWE00012	1 year	2025/6/14
Temperature/Humidity Meter	TFA	35.1083	MRTTWA00050	1 year	2025/6/2

Conducted Test Equipment

Instrument	Manufacturer	Type No.	Asset No.	Cali. Interval	Cali. Due Date
EXA Signal Analyzer	KEYSIGHT	N9010A	MRTTWA00012	1 year	2025/9/24
EXA Signal Analyzer	KEYSIGHT	N9010B	MRTTWA00074	1 year	2025/8/12
USB Wideband Power Sensor	KEYSIGHT	U2021XA	MRTTWA00015	1 year	2025/3/12

Test Software

Software	Version	Function
e3	9.160520a	EMI Test Software

6. MEASUREMENT UNCERTAINTY

Where relevant, the following test uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of $k = 2$.

Conducted Emission- Power Line
Measuring Uncertainty for a Level of Confidence of 95% ($U=2U_{c(y)}$): 0.15MHz~30MHz: ± 2.53 dB
Radiated Spurious Emission
Measuring Uncertainty for a Level of Confidence of 95% ($U=2U_{c(y)}$): 9kHz~30MHz: ± 3.92 dB 30MHz~1GHz: ± 4.25 dB 1GHz~18GHz: ± 4.40 dB 18GHz~40GHz: ± 4.45 dB
Frequency Error
Measuring Uncertainty for a Level of Confidence of 95% ($U=2U_{c(y)}$): ± 78.4 Hz
Conducted Power
Measuring Uncertainty for a Level of Confidence of 95% ($U=2U_{c(y)}$): ± 0.84 dB
Conducted Spurious Emission
Measuring Uncertainty for a Level of Confidence of 95% ($U=2U_{c(y)}$): ± 2.65 dB
Occupied Bandwidth
Measuring Uncertainty for a Level of Confidence of 95% ($U=2U_{c(y)}$): ± 3.3 %
Temp. / Humidity
Measuring Uncertainty for a Level of Confidence of 95% ($U=2U_{c(y)}$): $\pm 0.82^\circ\text{C}$ / ± 3 %
DC Voltage
Measuring Uncertainty for a Level of Confidence of 95% ($U=2U_{c(y)}$): ± 0.3 %

7. TEST RESULT

7.1. Summary

Product Name: WiFi 7 Router

FCC Classification: (DTS) Digital Transmission System

FCC Part Section(s)	Test Description	Test Limit	Test Condition	Test Result	Reference
15.247(a)(2)	6dB Bandwidth	$\geq 500\text{kHz}$	Conducted	Pass	Section 7.2
15.247(b)(3)	Output Power	$\leq 30.00\text{dBm}$		Pass	Section 7.3
15.247(e)	Power Spectral Density	$\leq 8.00\text{dBm/3kHz}$		Pass	Section 7.4
15.247(d)	Out-of-Band Emissions	Conducted $\geq 30\text{dBc}$		Pass	Section 7.5
15.205 15.209	Spurious Emission	$< \text{FCC 15.209 limits}$	Radiated	Pass	Section 7.6
15.205 15.209	Band Edge Measurement	$\leq 74\text{dBuV/m(Peak)}$ $\leq 54\text{dBuV/m(Average)}$		Pass	Section 7.7
15.207	AC Conducted Emissions 150kHz - 30MHz	$< \text{FCC 15.207 limits}$	Line Conducted	Pass	Section 7.8

Notes:

- 1) Determining compliance is based on the test results met the regulation limits or requirements declared by clients, and the test results don't take into account the value of measurement uncertainty.
- 2) For radiated emission test, every axis (X, Y, Z) was also verified when applicable. The test results shown in the following sections represent the worst case emissions.
- 3) The analyzer plots shown in this section were all taken with a correction table loaded into the analyzer. The correction table was used to account for the losses of the cables and attenuators used as part of the system to connect the EUT to the analyzer at all frequencies of interest.

7.2. 6dB Bandwidth Measurement

7.2.1. Test Limit

The minimum 6dB bandwidth shall be at least 500 kHz.

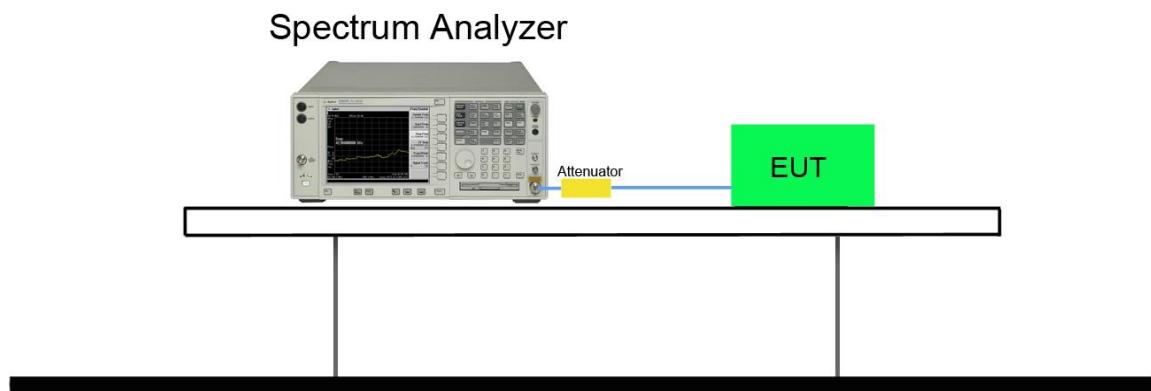
7.2.2. Test Procedure used

ANSI C63.10 - 2013 Section 11.8

7.2.3. Test Setting

1. The Spectrum's automatic bandwidth measurement capability was used to perform the 6dB bandwidth measurement. The "X" dB bandwidth parameter was set to $X = 6$. The bandwidth measurement was not influenced by any intermediate power nulls in the fundamental emission.
2. Set RBW = 100 kHz
3. VBW $\geq 3 \times$ RBW
4. Detector = Peak
5. Trace mode = max hold
6. Sweep = auto couple
7. Allow the trace was allowed to stabilize

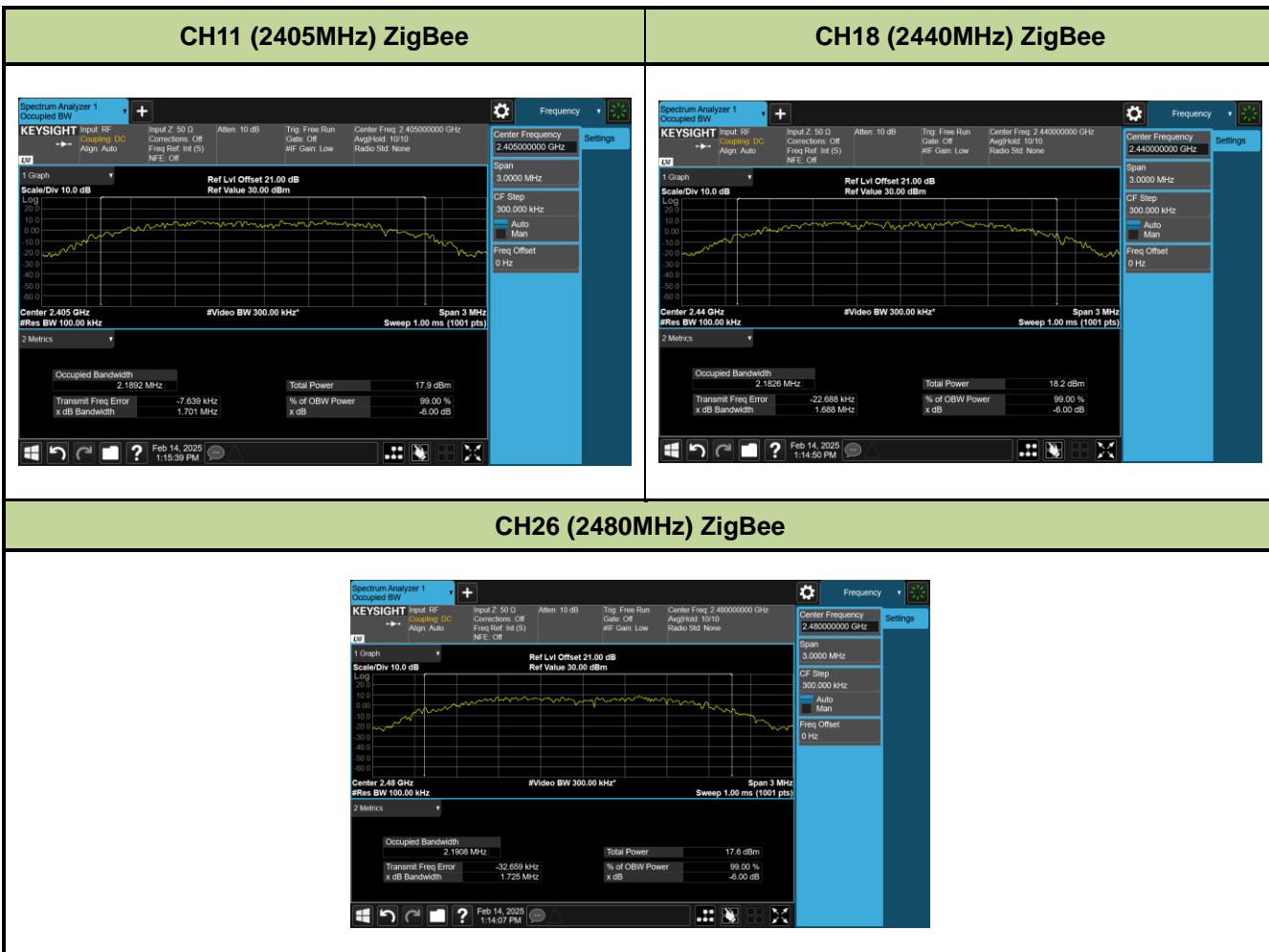
7.2.4. Test Setup



7.2.5. Test Result

Product	WiFi 7 Router	Temperature	25°C
Test Engineer	Jung	Relative Humidity	54%
Test Site	SR6	Test Date	2025/2/14

Test Mode	Channel No.	Frequency (MHz)	6dB Bandwidth (MHz)	Limit (MHz)	Result
ZigBee	11	2405	1.701	≥ 0.5	Pass
	18	2440	1.688	≥ 0.5	Pass
	26	2480	1.725	≥ 0.5	Pass



7.3. Output Power Measurement

7.3.1. Test Limit

The maximum out power shall be less 1 Watt (30dBm).

The conducted output power limit specified in paragraph FCC Part 15.247(b) of this section is based on the use of antennas with directional gains that do not exceed 6 dBi. If transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values in paragraphs FCC Part 15.247(b)(3) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

7.3.2. Test Procedure Used

ANSI C63.10 - 2013 Section 11.9.2.3.2

7.3.3. Test Setting

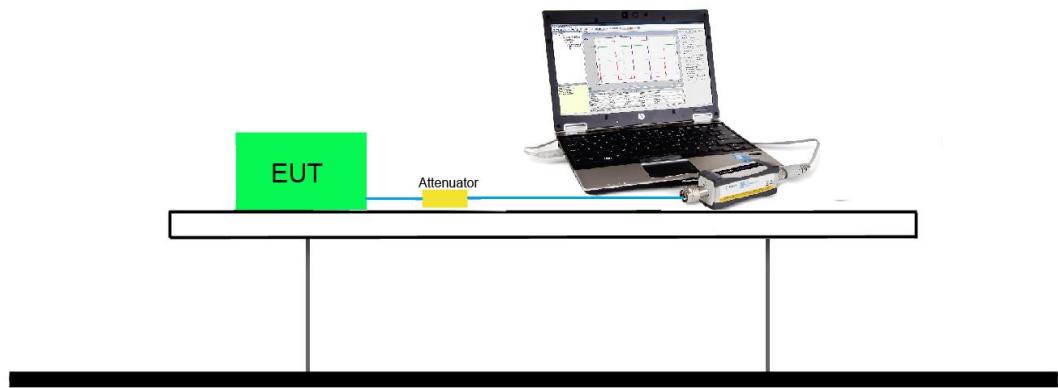
Peak Power Measurement

The maximum peak conducted output power may be measured using a broadband peak RF power meter. The power meter shall have a video bandwidth that is greater than or equal to the DTS bandwidth and shall utilize a fast-responding diode detector.

Average Power Measurement

Average power measurements were performed only when the EUT was transmitting at its maximum power control level using a broadband power meter with a pulse sensor. The power meter implemented triggering and gating capabilities which were set up such that power measurements were recorded only during the ON time of the transmitter. The trace was averaged over 100 traces to obtain the final measured average power.

7.3.4. Test Setup



7.3.5. Test Result of Output Power

Product	WiFi 7 Router	Temperature	25°C
Test Engineer	Jung	Relative Humidity	54%
Test Site	SR6	Test Date	2025/2/14

Test Mode	Channel No.	Frequency (MHz)	Average Power (dBm)	Peak Power (dBm)	Limit (dBm)
ZigBee	11	2405	17.82	17.93	< 30
	18	2440	18.30	18.37	< 30
	25	2475	17.67	17.70	< 30
	26	2480	12.65	12.81	< 30

Note1: Output power =Reading value on power meter + cable loss.

Note2: Antenna Gain: 3.69dBi.

7.4. Power Spectral Density Measurement

7.4.1. Test Limit

The maximum permissible power spectral density is 8dBm in any 3 kHz band.

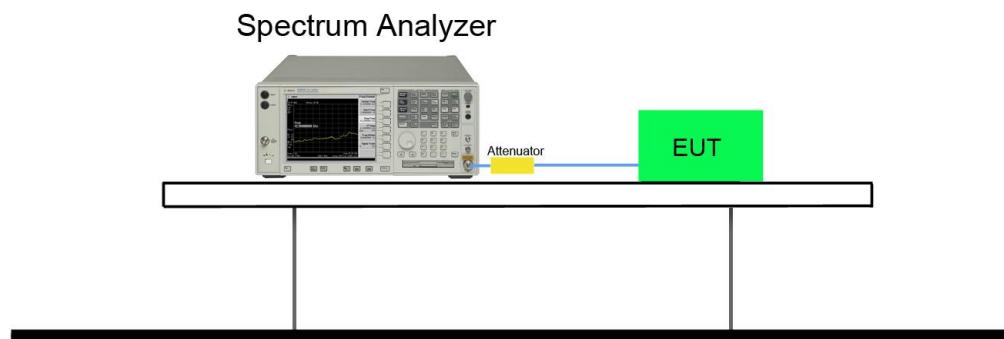
7.4.2. Test Procedure Used

ANSI C63.10 - 2013 Section 11.10.5

7.4.3. Test Setting

1. Measure the duty cycle (x) of the transmitter output signal.
2. Set instrument center frequency to DTS channel center frequency.
3. Set span to at least 1.5 times the OBW.
4. RBW = 10 kHz.
5. VBW = 30 kHz.
6. Detector = RMS.
7. Ensure that the number of measurement points in the sweep $\geq 2 \times \text{span}/\text{RBW}$.
8. Sweep time = auto couple.
9. Don't use sweep triggering. Allow sweep to "free run".
10. Employ trace averaging (RMS) mode over a minimum of 100 traces.
11. Use the peak marker function to determine the maximum amplitude level.
12. Add $10 \log (1/x)$, where x is the duty cycle measured in step (a, to the measured PSD to compute the average PSD during the actual transmission time.

7.4.4. Test Setup



7.4.5. Test Result

Product	WiFi 7 Router	Temperature	25°C
Test Engineer	Jung	Relative Humidity	54%
Test Site	SR6	Test Date	2025/2/14

Test Mode	Channel No.	Frequency (MHz)	PSD (dBm / 10kHz)	Duty Cycle (%)	Total Average PSD (dBm / 10kHz)	Limit (dBm / 3kHz)	Result
ZigBee	11	2405	2.34	100.00%	2.340	≤ 8	Pass
	18	2440	3.41	100.00%	3.410	≤ 8	Pass
	26	2480	2.46	100.00%	2.460	≤ 8	Pass

Note: Total Average PSD= Average PSD + 10*log (1/Duty Cycle).

CH11 (2405MHz) ZigBee

CH18 (2440MHz) ZigBee

CH26 (2480MHz) ZigBee


7.5. Out-of-Band Spurious Emissions Emissions Measurement

7.5.1. Test Limit

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 30 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on RF conducted measurement, provided the transmitter demonstrates compliance with the peak conducted power limits.

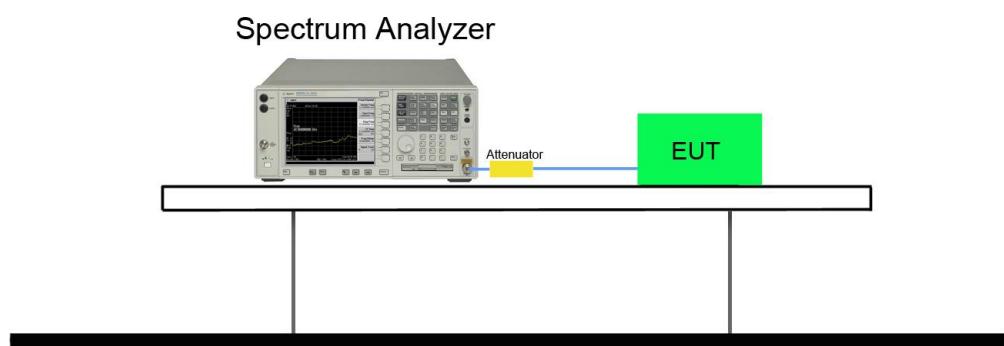
7.5.2. Test Procedure Used

ANSI C63.10 - 2013 Section 11.11

7.5.3. Test Setting

- (a) Set instrument center frequency to DTS channel center frequency
- (b) Set the span to \geq 1.5 times the DTS bandwidth
- (c) Set the RBW = 100 kHz
- (d) Set the VBW \geq 3 x RBW
- (e) Detector = peak
- (f) Sweep time = auto couple
- (g) Trace mode = max hold
- (h) Allow trace to fully stabilize

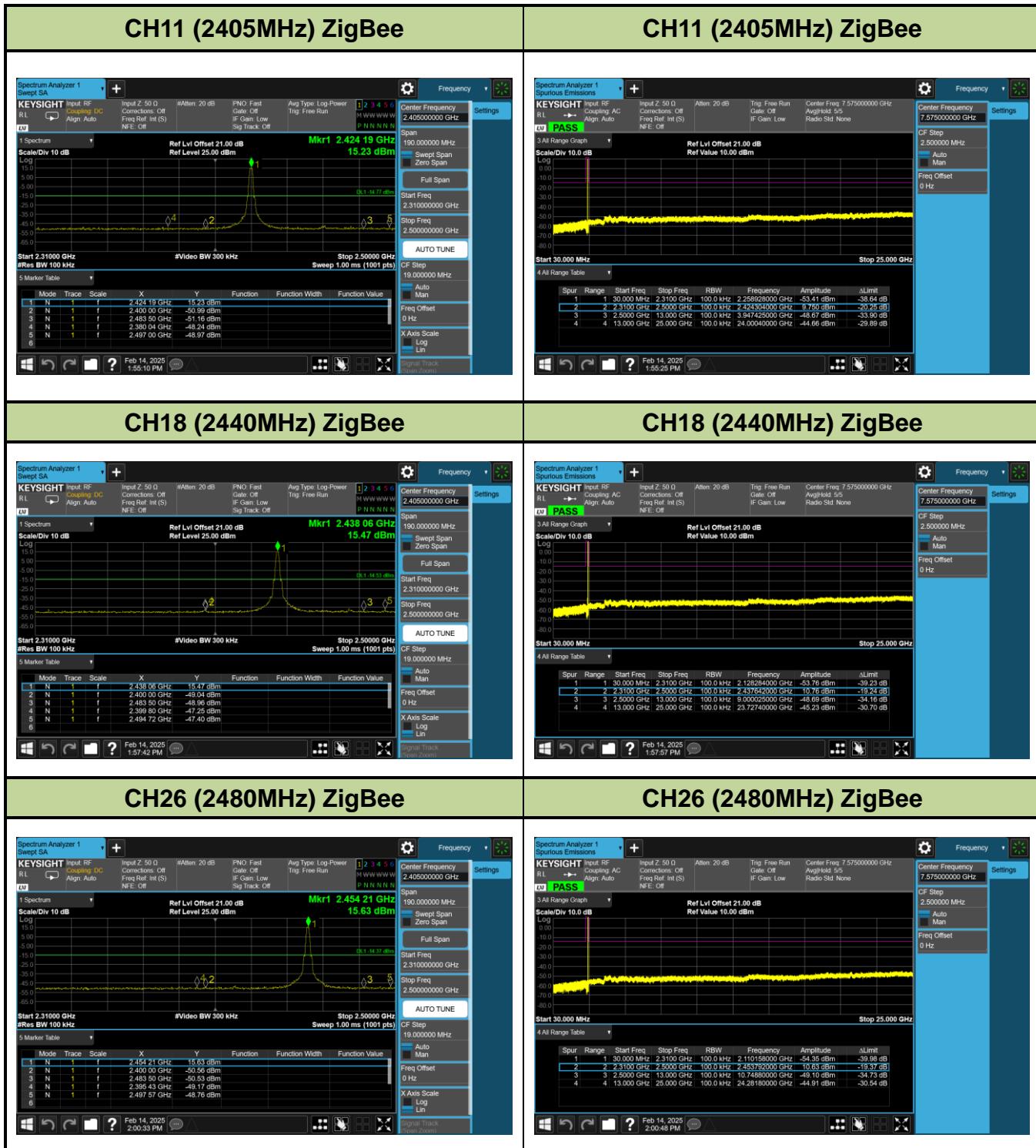
7.5.4. Test Setup



7.5.5. Test Result

Product	WiFi 7 Router	Temperature	25°C
Test Engineer	Jung	Relative Humidity	54%
Test Site	SR6	Test Date	2025/2/14

Test Mode	Channel No.	Frequency (MHz)	Limit	Result
ZigBee	11	2405	30dBc	Pass
	18	2440	30dBc	Pass
	26	2480	30dBc	Pass



7.6. Radiated Spurious Emission Measurement

7.6.1. Test Limit

All out of band emissions appearing in a restricted band as specified in Section 15.205 of the Title 47 CFR must not exceed the limits shown in Table per Section 15.209.

FCC Part 15 Subpart C Paragraph 15.209		
Frequency [MHz]	Field Strength [V/m]	Measured Distance [Meters]
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

7.6.2. Test Procedure Used

ANSI C63.10 - 2013 Section 6.3 (General Requirements)

ANSI C63.10 - 2013 Section 6.4 (Standard test method below 30MHz)

ANSI C63.10 - 2013 Section 6.5 (Standard test method above 30MHz to 1GHz)

ANSI C63.10 - 2013 Section 6.6 (Standard test method above 1GHz)

7.6.3. Test Setting

Peak Field Strength Measurements

1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest
2. RBW = as specified in Table 1
3. VBW = 3MHz
4. Detector = peak

5. Sweep time = auto couple
6. Trace mode = max hold
7. Trace was allowed to stabilize

Table 1 - RBW as a function of frequency

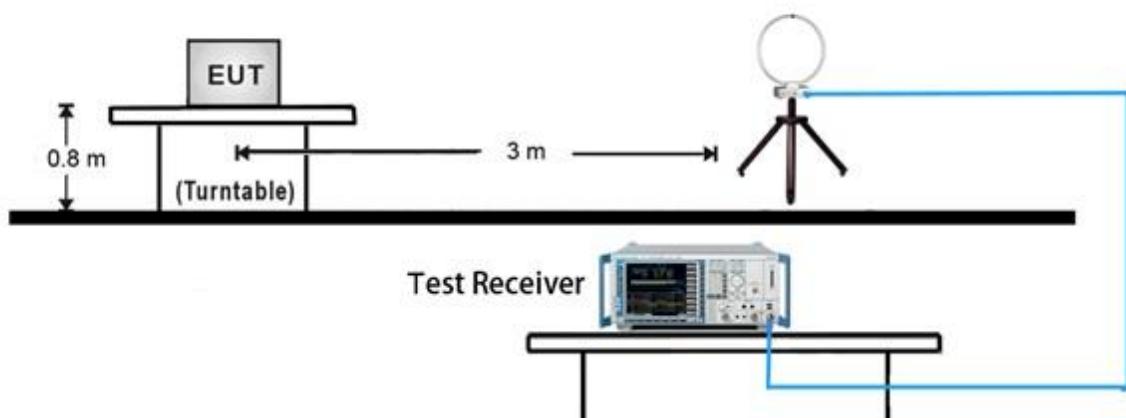
Frequency	RBW
9 ~ 150 kHz	200 ~ 300 Hz
0.15 ~ 30 MHz	9 ~ 10 kHz
30 ~ 1000 MHz	100 ~ 120 kHz
> 1000 MHz	1 MHz

Average Field Strength Measurements

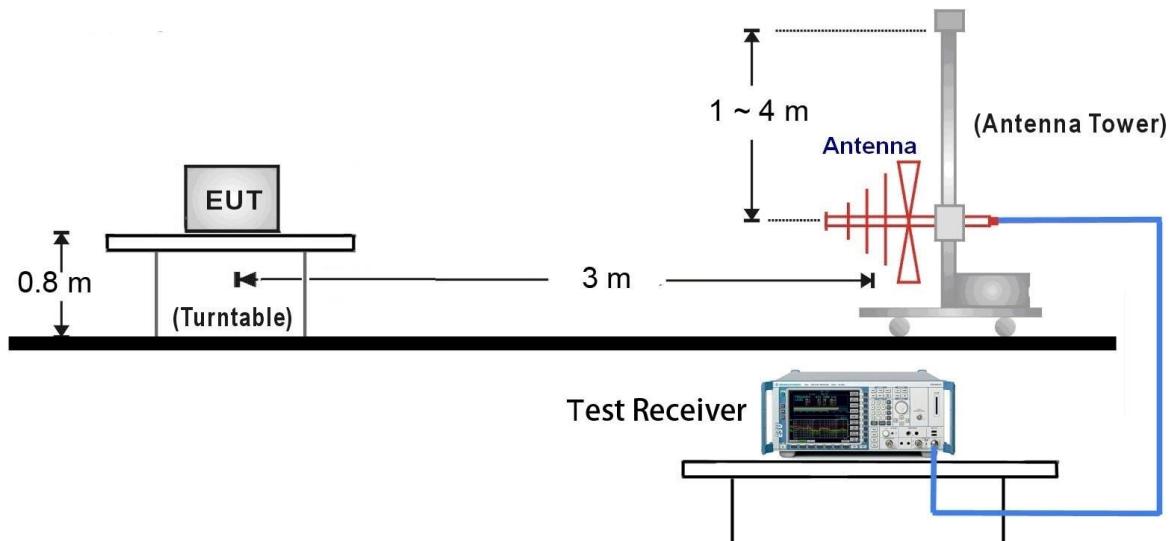
1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest
2. RBW = 1MHz
3. VBW $\geq 1/T$
4. De As an alternative, the instrument may be set to linear detector mode. Ensure that video filtering is applied in linear voltage domain (rather than in a log or dB domain). Some instruments require linear display mode in order to accomplish this. Others have a setting for Average-VBW Type, which can be set to "Voltage" regardless of the display mode
5. Detector = Peak
6. Sweep time = auto
7. Trace mode = max hold
8. Allow max hold to run for at least 50 times (1/duty cycle) traces

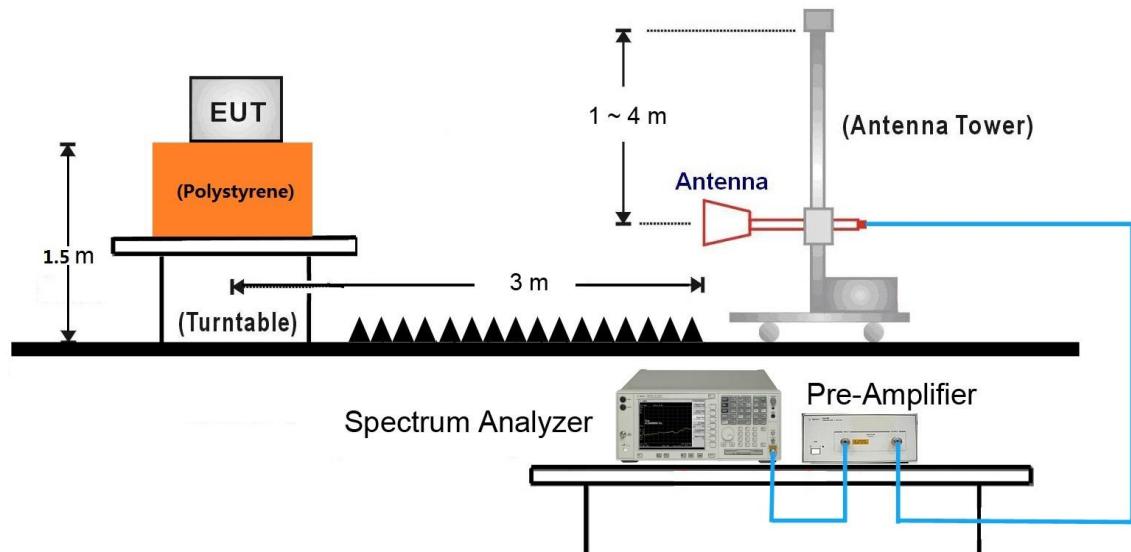
7.6.4. Test Setup

9kHz ~ 30MHz Test Setup:



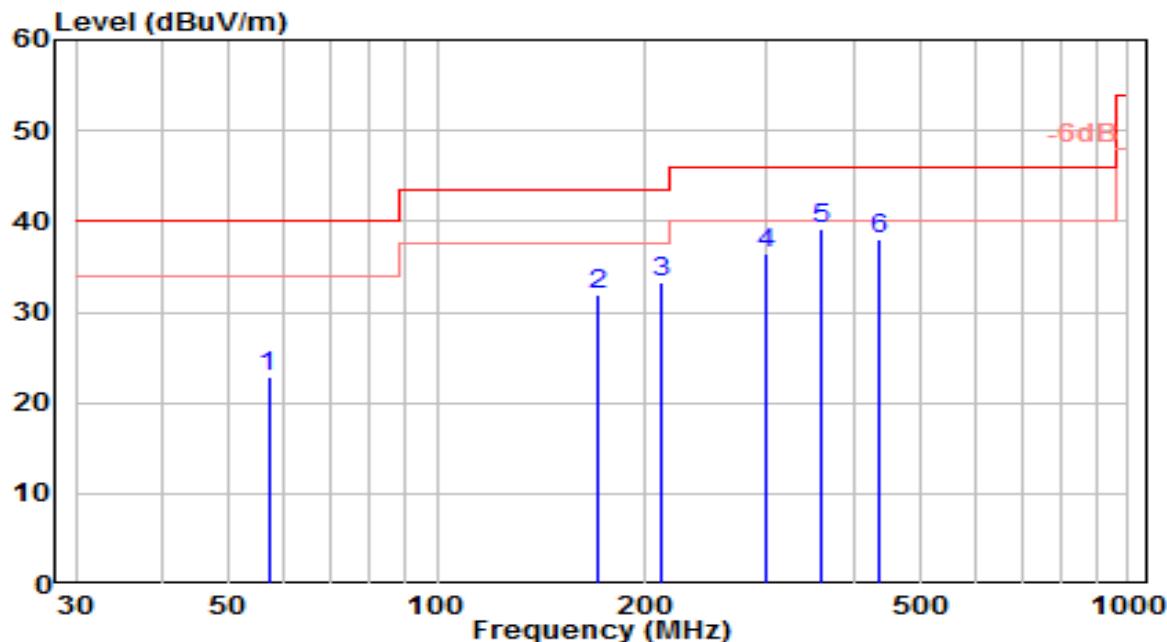
30MHz ~ 1GHz Test Setup:



1GHz ~ 25GHz Test Setup:

7.6.5. Test Result

EUT	WiFi 7 Router	Date of Test	2025-02-20
Factor	VULB 9162	Temp. / Humidity	24°C / 61%
Polarity	Horizontal	Site / Test Engineer	AC1 / Tim
Test Mode	ZigBee_TX_CH 18	Test Voltage	AC 120V/60Hz

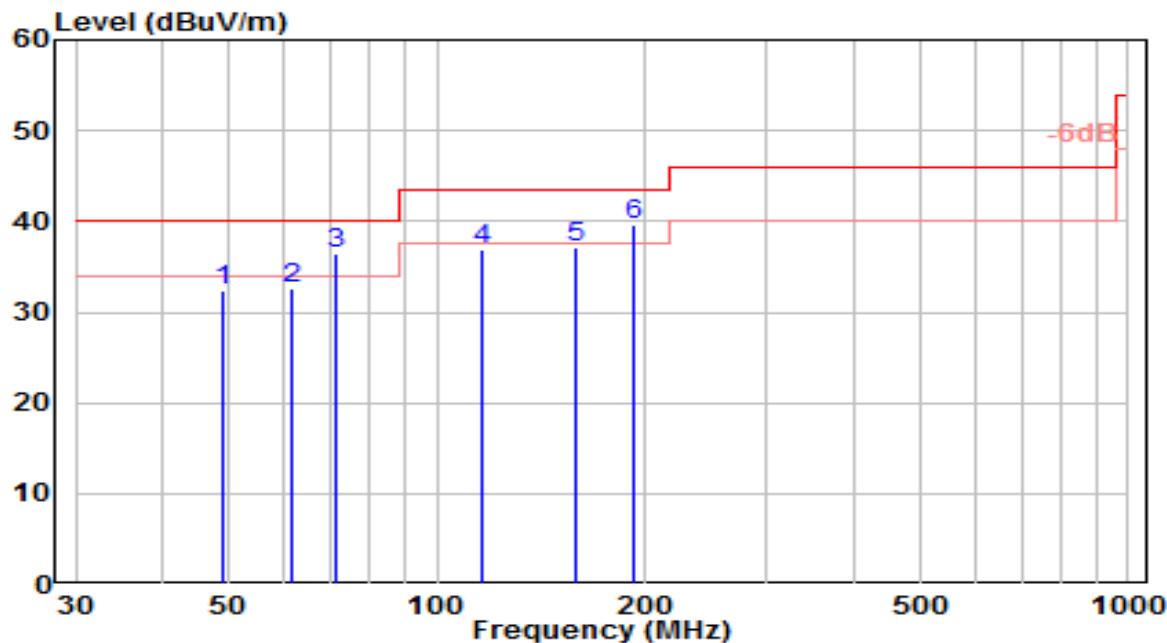


No	Frequency (MHz)	Reading (dBuV)	C.F (dB/m)	Measurement (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Height (cm)	Angle (deg)	Remark (QP/PK/AV)
1	57.014	2.60	20.31	22.91	-17.09	40.00	150	220	QP
2	171.288	15.58	16.42	31.99	-11.51	43.50	150	300	QP
3	210.546	14.90	18.33	33.22	-10.28	43.50	150	270	QP
4	298.841	15.29	21.14	36.43	-9.57	46.00	150	330	QP
5 *	359.535	16.11	23.14	39.25	-6.75	46.00	150	5	QP
6	437.699	13.89	24.18	38.07	-7.93	46.00	100	50	QP

Note:

1. "*", means this data is the worst emission level.
2. C.F (Correction Factor) = Antenna Factor (dB/m) + Cable Loss (dB).
3. Measurement (dBuV/m) = Reading(dBuV) + C.F (Correction Factor).
4. The emission levels of other frequencies are very lower than the limit and not show in test report.
5. The amplitude of radiated emissions (frequency range from 9kHz to 30MHz) is that proximity to ambient noise, which also are attenuated more than 20dB below the permissible value. Therefore, the data is not presented in the report.

EUT	WiFi 7 Router	Date of Test	2025-02-20
Factor	VULB 9162	Temp. / Humidity	24°C /61%
Polarity	Vertical	Site / Test Engineer	AC1 / Tim
Test Mode	ZigBee_TX_CH 18	Test Voltage	AC 120V/60Hz

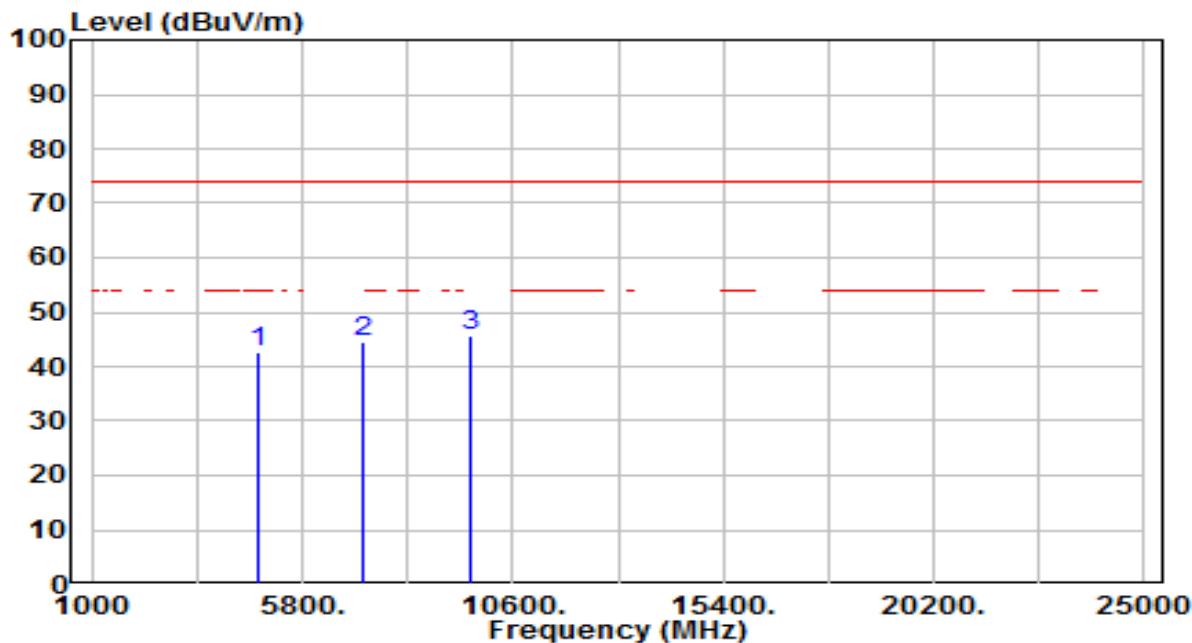


No	Frequency (MHz)	Reading (dBuV)	C.F (dB/m)	Measurement (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Height (cm)	Angle (deg)	Remark (QP/PK/AV)
1	48.778	11.21	21.19	32.40	-7.60	40.00	100	330	QP
2	61.798	13.39	19.25	32.64	-7.36	40.00	100	340	QP
3 *	71.225	20.45	15.99	36.44	-3.56	40.00	150	50	QP
4	115.669	18.96	17.91	36.87	-6.63	43.50	100	125	QP
5	158.190	21.28	15.95	37.23	-6.27	43.50	100	275	QP
6	192.330	21.28	18.23	39.51	-3.99	43.50	100	90	QP

Note:

1. **, means this data is the worst emission level.
2. C.F (Correction Factor) = Antenna Factor (dB/m) + Cable Loss (dB).
3. Measurement (dBuV/m) = Reading(dBuV) + C.F (Correction Factor).
4. The emission levels of other frequencies are very lower than the limit and not show in test report.
5. The amplitude of radiated emissions (frequency range from 9kHz to 30MHz) is that proximity to ambient noise, which also are attenuated more than 20dB below the permissible value. Therefore, the data is not presented in the report.

EUT	WiFi 7 Router	Date of Test	2025-02-18
Factor	BBHA 9120D & BBHA 9170	Temp. / Humidity	22°C /53%
Polarity	Horizontal	Site / Test Engineer	AC1 / Todd
Test Mode	ZigBee_TX_CH 11	Test Voltage	AC 120V/60Hz

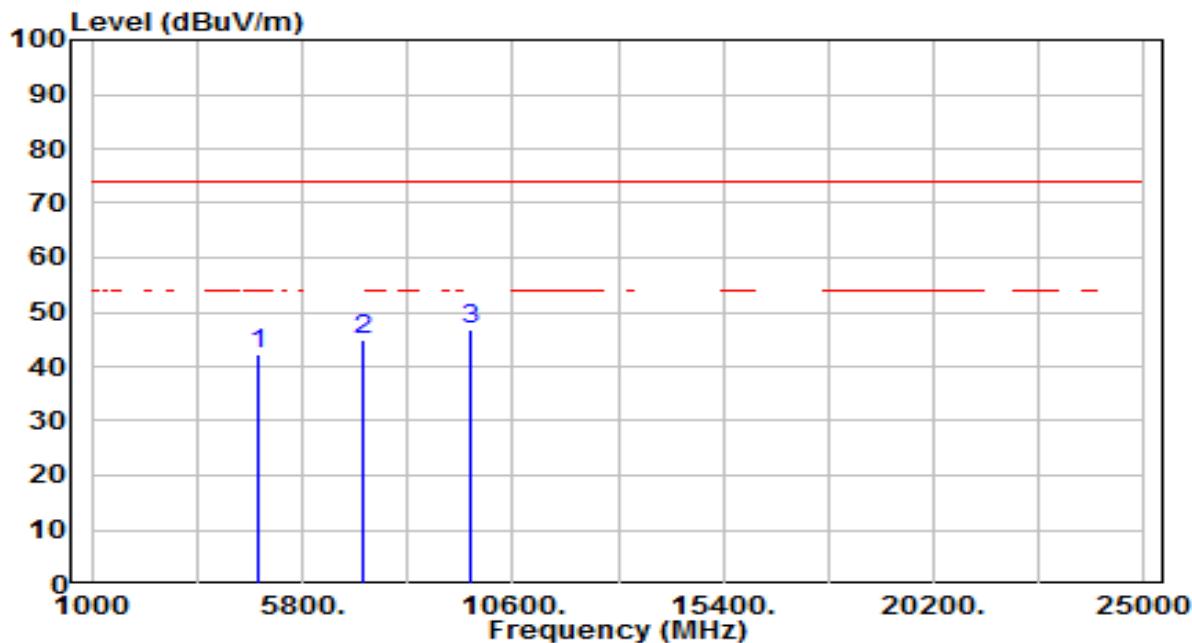


No	Frequency (MHz)	Reading (dBuV)	C.F (dB/m)	Measurement (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Height (cm)	Angle (deg)	Remark (QP/PK/AV)
1	4810.000	38.89	3.72	42.62	-31.38	74.00	100	240	Peak
2	7215.000	32.76	11.60	44.36	-29.64	74.00	100	68	Peak
3 *	9620.000	29.77	15.72	45.48	-28.52	74.00	100	107	Peak

Note:

1. " *", means this data is the worst emission level.
2. C.F (Correction Factor) = Antenna Factor (dB/m) + Cable Loss (dB) – Preamplifier(dB).
3. Measurement (dBuV/m) = Reading(dBuV) + C.F (Correction Factor).
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

EUT	WiFi 7 Router	Date of Test	2025-02-18
Factor	BBHA 9120D & BBHA 9170	Temp. / Humidity	22°C /53%
Polarity	Vertical	Site / Test Engineer	AC1 / Todd
Test Mode	ZigBee_TX_CH 11	Test Voltage	AC 120V/60Hz

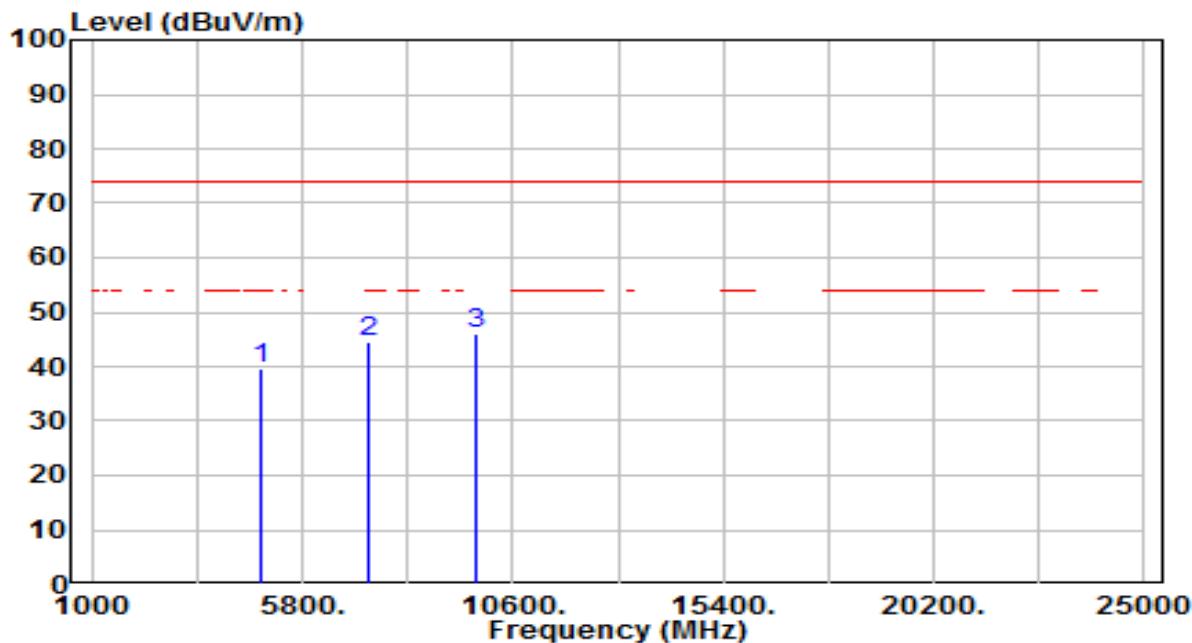


No	Frequency (MHz)	Reading (dB _{BuV})	C.F (dB/m)	Measurement (dB _{BuV/m})	Margin (dB)	Limit (dB _{BuV/m})	Height (cm)	Angle (deg)	Remark (QP/PK/AV)
1	4810.000	38.39	3.72	42.11	-31.89	74.00	100	264	Peak
2	7215.000	33.34	11.60	44.95	-29.05	74.00	100	357	Peak
3 *	9620.000	31.17	15.72	46.89	-27.11	74.00	100	23	Peak

Note:

1. **, means this data is the worst emission level.
2. C.F (Correction Factor) = Antenna Factor (dB/m) + Cable Loss (dB) – Preamplifier(dB).
3. Measurement (dB_{BuV/m}) = Reading(dB_{BuV}) + C.F (Correction Factor).
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

EUT	WiFi 7 Router	Date of Test	2025-02-18
Factor	BBHA 9120D & BBHA 9170	Temp. / Humidity	22°C /53%
Polarity	Horizontal	Site / Test Engineer	AC1 / Todd
Test Mode	ZigBee_TX_CH 18	Test Voltage	AC 120V/60Hz

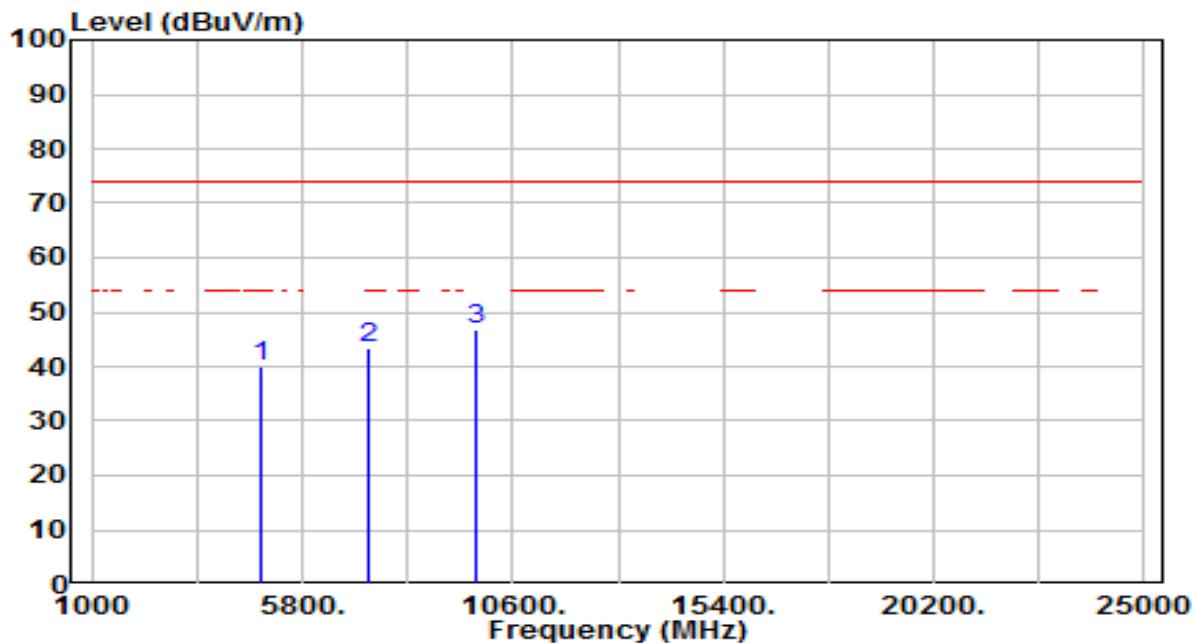


No	Frequency (MHz)	Reading (dB _{BuV})	C.F (dB/m)	Measurement (dB _{BuV/m})	Margin (dB)	Limit (dB _{BuV/m})	Height (cm)	Angle (deg)	Remark (QP/PK/AV)
1	4880.000	35.84	3.85	39.69	-34.31	74.00	100	106	Peak
2	7320.000	32.66	11.97	44.64	-29.36	74.00	100	68	Peak
3 *	9760.000	30.03	15.98	46.00	-28.00	74.00	100	329	Peak

Note:

1. **, means this data is the worst emission level.
2. C.F (Correction Factor) = Antenna Factor (dB/m) + Cable Loss (dB) – Preamplifier(dB).
3. Measurement (dB_{BuV/m}) = Reading(dB_{BuV}) + C.F (Correction Factor).
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

EUT	WiFi 7 Router	Date of Test	2025-02-18
Factor	BBHA 9120D & BBHA 9170	Temp. / Humidity	22°C /53%
Polarity	Vertical	Site / Test Engineer	AC1 / Todd
Test Mode	ZigBee_TX_CH 18	Test Voltage	AC 120V/60Hz

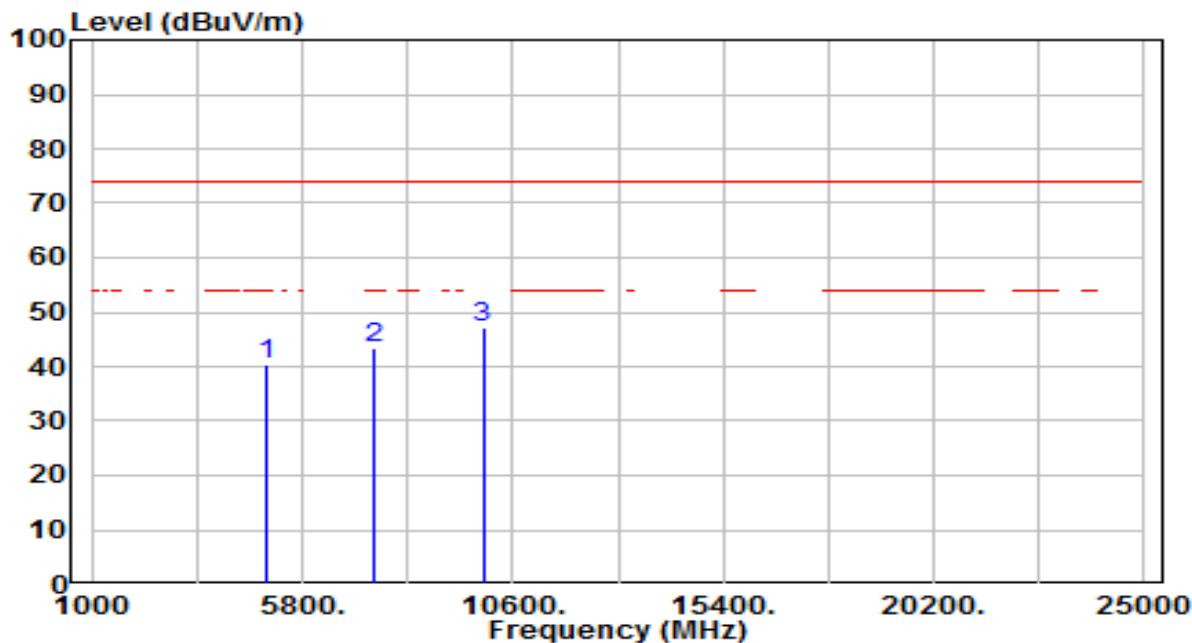


No	Frequency (MHz)	Reading (dBuV)	C.F (dB/m)	Measurement (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Height (cm)	Angle (deg)	Remark (QP/PK/AV)
1	4880.000	36.00	3.85	39.85	-34.15	74.00	100	290	Peak
2	7320.000	31.37	11.97	43.34	-30.66	74.00	100	357	Peak
3 *	9760.000	30.95	15.98	46.92	-27.08	74.00	100	300	Peak

Note:

1. **, means this data is the worst emission level.
2. C.F (Correction Factor) = Antenna Factor (dB/m) + Cable Loss (dB) – Preamplifier(dB).
3. Measurement (dBuV/m) = Reading(dBuV) + C.F (Correction Factor).
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

EUT	WiFi 7 Router	Date of Test	2025-02-18
Factor	BBHA 9120D & BBHA 9170	Temp. / Humidity	22°C /53%
Polarity	Horizontal	Site / Test Engineer	AC1 / Todd
Test Mode	ZigBee_TX_CH 26	Test Voltage	AC 120V/60Hz

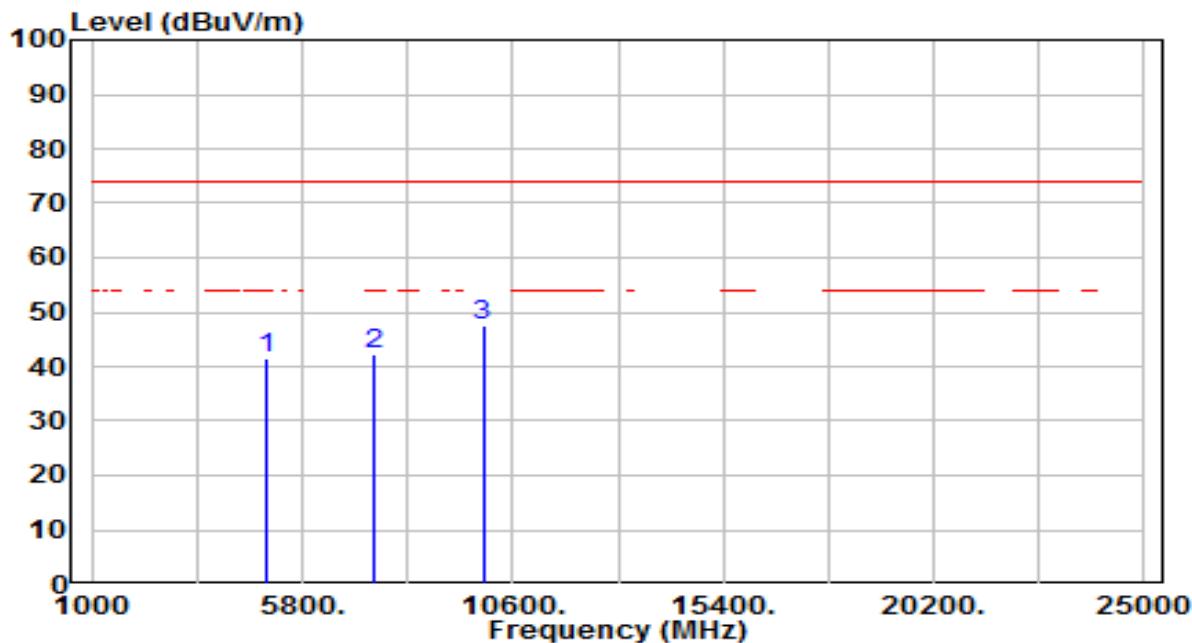


No	Frequency (MHz)	Reading (dBuV)	C.F (dB/m)	Measurement (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Height (cm)	Angle (deg)	Remark (QP/PK/AV)
1	4960.000	36.37	3.99	40.36	-33.64	74.00	100	238	Peak
2	7440.000	30.83	12.40	43.22	-30.78	74.00	100	108	Peak
3 *	9920.000	31.01	16.27	47.28	-26.72	74.00	100	136	Peak

Note:

1. " *", means this data is the worst emission level.
2. C.F (Correction Factor) = Antenna Factor (dB/m) + Cable Loss (dB) – Preamplifier(dB).
3. Measurement (dBuV/m) = Reading(dBuV) + C.F (Correction Factor).
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

EUT	WiFi 7 Router	Date of Test	2025-02-18
Factor	BBHA 9120D & BBHA 9170	Temp. / Humidity	22°C /53%
Polarity	Vertical	Site / Test Engineer	AC1 / Todd
Test Mode	ZigBee_TX_CH 26	Test Voltage	AC 120V/60Hz



No	Frequency (MHz)	Reading (dBuV)	C.F (dB/m)	Measurement (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Height (cm)	Angle (deg)	Remark (QP/PK/AV)
1	4960.000	37.38	3.99	41.37	-32.63	74.00	100	254	Peak
2	7440.000	29.86	12.40	42.25	-31.75	74.00	100	76	Peak
3 *	9920.000	31.33	16.27	47.60	-26.40	74.00	100	336	Peak

Note:

1. **, means this data is the worst emission level.
2. C.F (Correction Factor) = Antenna Factor (dB/m) + Cable Loss (dB) – Preamplifier(dB).
3. Measurement (dBuV/m) = Reading(dBuV) + C.F (Correction Factor).
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

7.7. Radiated Restricted Band Edge Measurement

7.7.1. Test Limit

All out of band emissions appearing in a restricted band as specified in Section 15.205 of the Title 47 CFR must not exceed the limits shown in Table per Section 15.209.

FCC Part 15 Subpart C Paragraph 15.209		
Frequency [MHz]	Field Strength [V/m]	Measured Distance [Meters]
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

7.7.2. Test Procedure Used

ANSI C63.10-2013 - Section 11.13

7.7.3. Test Setting

Peak Field Strength Measurements

1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest
2. RBW = as specified in Table 1
3. VBW = $3 * \text{RBW}$
4. Detector = peak
5. Sweep time = auto couple
6. Trace mode = max hold
7. Trace was allowed to stabilize

Table 1 - RBW as a function of frequency

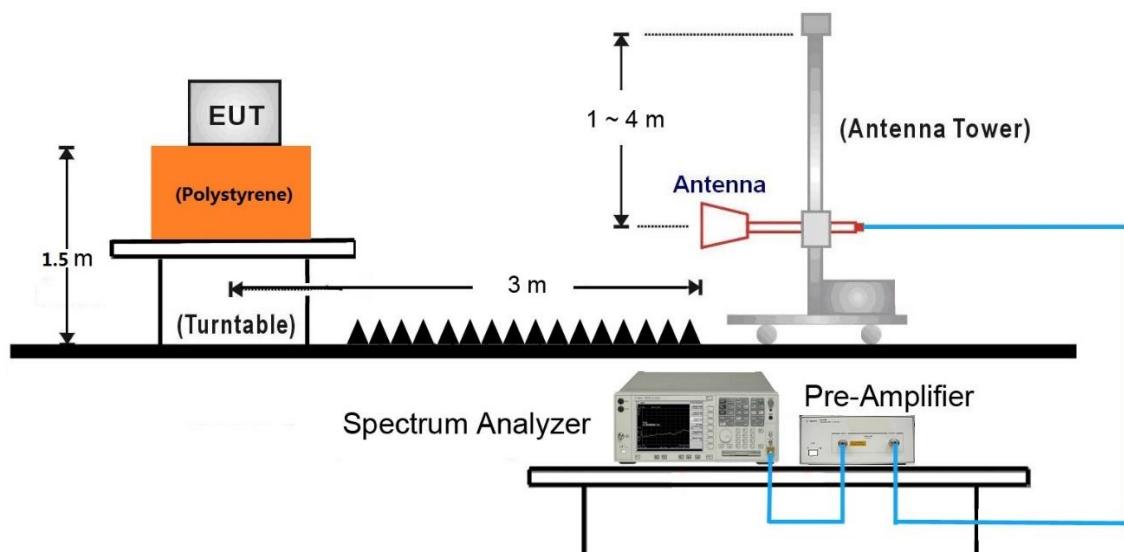
Frequency	RBW
9 ~ 150 kHz	200 ~ 300 Hz
0.15 ~ 30 MHz	9 ~ 10 kHz
30 ~ 1000 MHz	100 ~ 120 kHz
> 1000 MHz	1 MHz

Average Field Strength Measurements

1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest
2. RBW = 1MHz
3. VBW $\geq 1/T$
4. De As an alternative, the instrument may be set to linear detector mode. Ensure that video filtering is applied in linear voltage domain (rather than in a log or dB domain). Some instruments require linear display mode in order to accomplish this. Others have a setting for Average-VBW Type, which can be set to "Voltage" regardless of the display mode
5. Detector = Peak
6. Sweep time = auto
7. Trace mode = max hold
8. Allow max hold to run for at least 50 times (1/duty cycle) traces

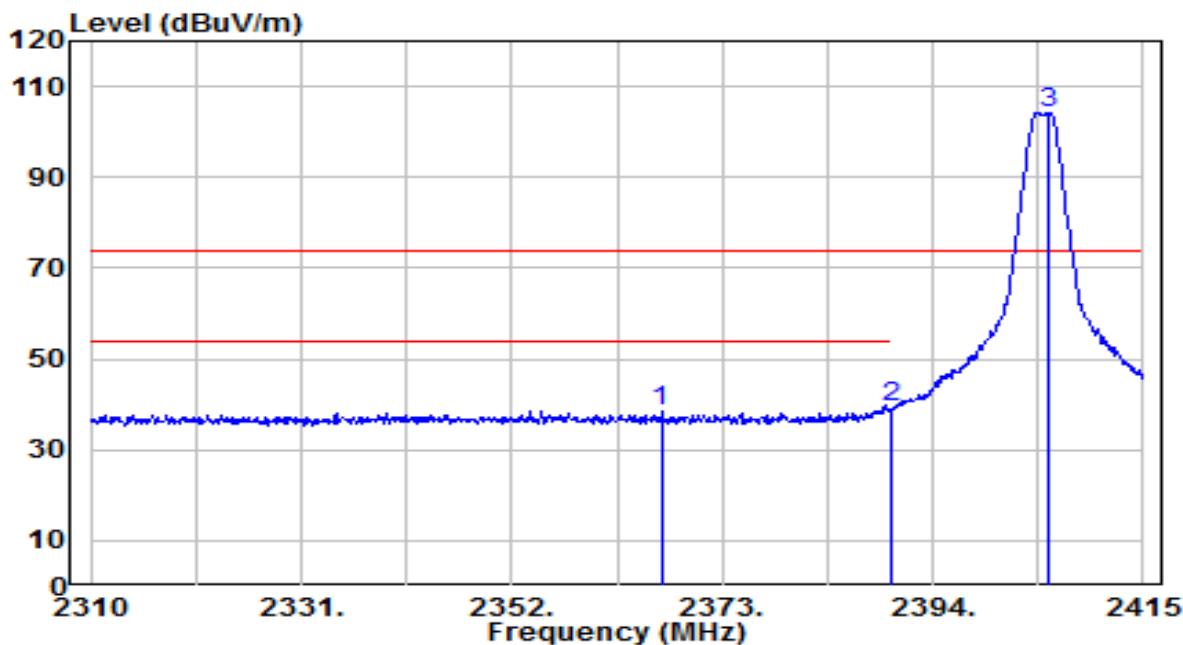
7.7.4. Test Setup

1GHz ~ 25GHz Test Setup:



7.7.5. Test Result

EUT	WiFi 7 Router	Date of Test	2025-02-18
Factor	BBHA 9120D	Temp. / Humidity	22°C /53%
Polarity	Horizontal	Site / Test Engineer	AC1 / Todd
Test Mode	ZigBee_TX_CH 11	Test Voltage	AC 120V/60Hz

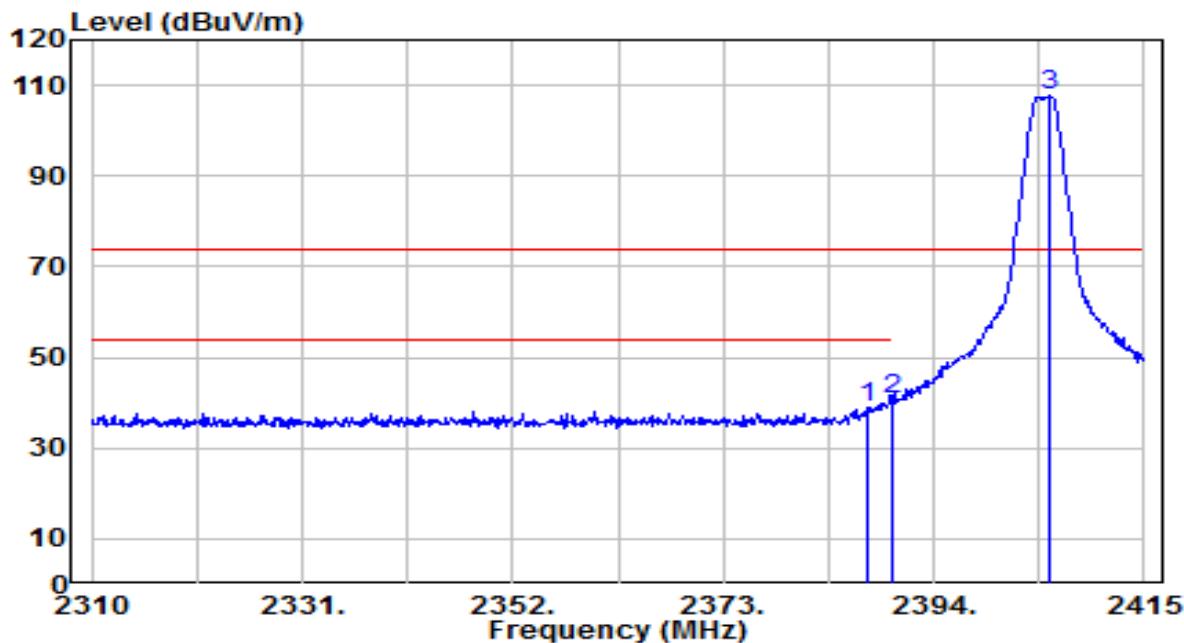


No	Frequency (MHz)	Reading (dB _{BuV})	C.F (dB/m)	Measurement (dB _{BuV/m})	Margin (dB)	Limit (dB _{BuV/m})	Height (cm)	Angle (deg)	Remark (QP/PK/AV)
1	2366.910	40.66	-2.10	38.56	-35.44	74.00	100	15	Peak
2 *	2390.000	41.53	-2.03	39.50	-34.50	74.00	100	15	Peak
3	2405.550	106.23	-1.98	104.25	N/A	N/A	100	15	Peak

Note:

1. **, means this data is the worst emission level.
2. C.F (Correction Factor) = Antenna Factor (dB/m) + Cable Loss (dB) – Preamplifier(dB).
3. Measurement (dB_{BuV/m}) = Reading(dB_{BuV}) + C.F (Correction Factor).
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

EUT	WiFi 7 Router	Date of Test	2025-02-18
Factor	BBHA 9120D	Temp. / Humidity	22°C /53%
Polarity	Vertical	Site / Test Engineer	AC1 / Todd
Test Mode	ZigBee_TX_CH 11	Test Voltage	AC 120V/60Hz

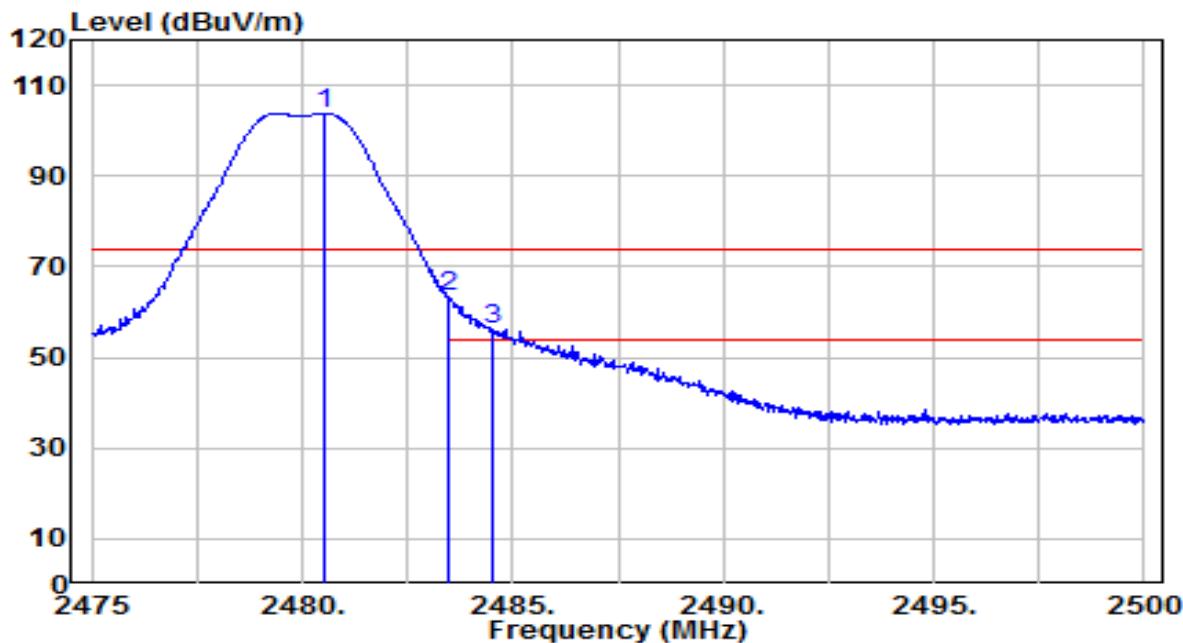


No	Frequency (MHz)	Reading (dBuV)	C.F (dB/m)	Measurement (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Height (cm)	Angle (deg)	Remark (QP/PK/AV)
1	2387.385	41.11	-2.04	39.08	-34.92	74.00	100	80	Peak
2 *	2390.000	42.74	-2.03	40.71	-33.29	74.00	100	80	Peak
3	2405.655	109.57	-1.98	107.59	N/A	N/A	100	80	Peak

Note:

1. **, means this data is the worst emission level.
2. C.F (Correction Factor) = Antenna Factor (dB/m) + Cable Loss (dB) – Preamplifier(dB).
3. Measurement (dBuV/m) = Reading(dBuV) + C.F (Correction Factor).
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

EUT	WiFi 7 Router	Date of Test	2025-02-18
Factor	BBHA 9120D	Temp. / Humidity	22°C /53%
Polarity	Horizontal	Site / Test Engineer	AC1 / Todd
Test Mode	ZigBee_TX_CH 26	Test Voltage	AC 120V/60Hz

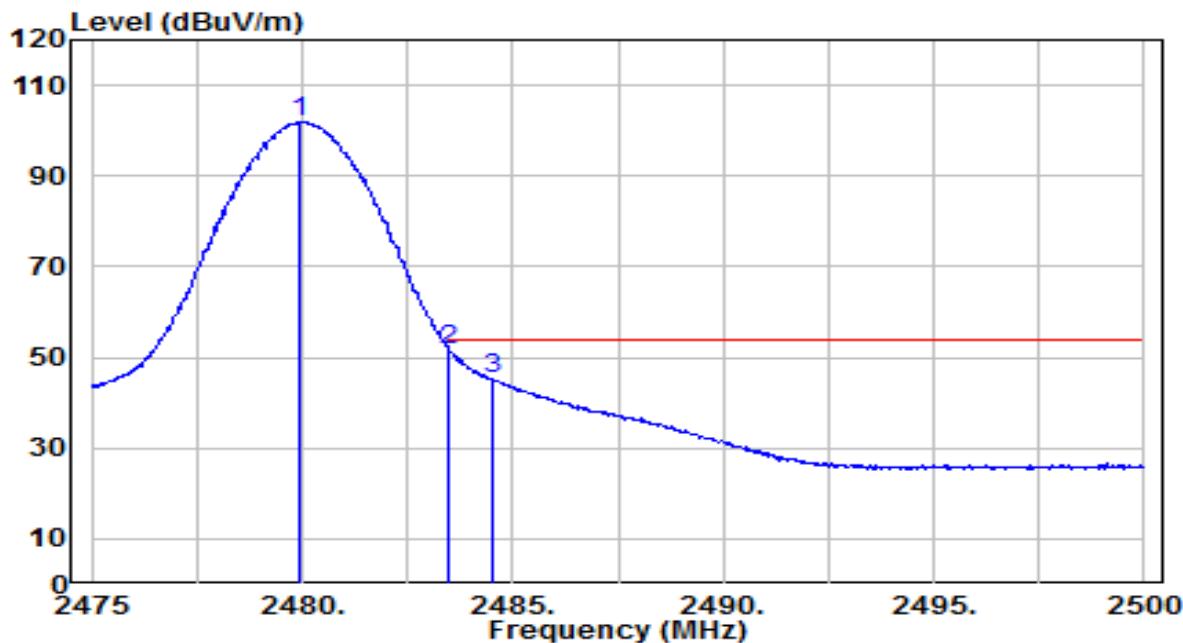


No	Frequency (MHz)	Reading (dBuV)	C.F (dB/m)	Measurement (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Height (cm)	Angle (deg)	Remark (QP/PK/AV)
1	2480.525	105.60	-1.74	103.86	N/A	N/A	140	260	Peak
2 *	2483.500	64.93	-1.73	63.20	-10.80	74.00	140	260	Peak
3	2484.500	58.02	-1.73	56.29	-17.71	74.00	140	260	Peak

Note:

1. " *", means this data is the worst emission level.
2. C.F (Correction Factor) = Antenna Factor (dB/m) + Cable Loss (dB) – Preamplifier(dB).
3. Measurement (dBuV/m) = Reading(dBuV) + C.F (Correction Factor).
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

EUT	WiFi 7 Router	Date of Test	2025-02-18
Factor	BBHA 9120D	Temp. / Humidity	22°C /53%
Polarity	Horizontal	Site / Test Engineer	AC1 / Todd
Test Mode	ZigBee_TX_CH 26	Test Voltage	AC 120V/60Hz

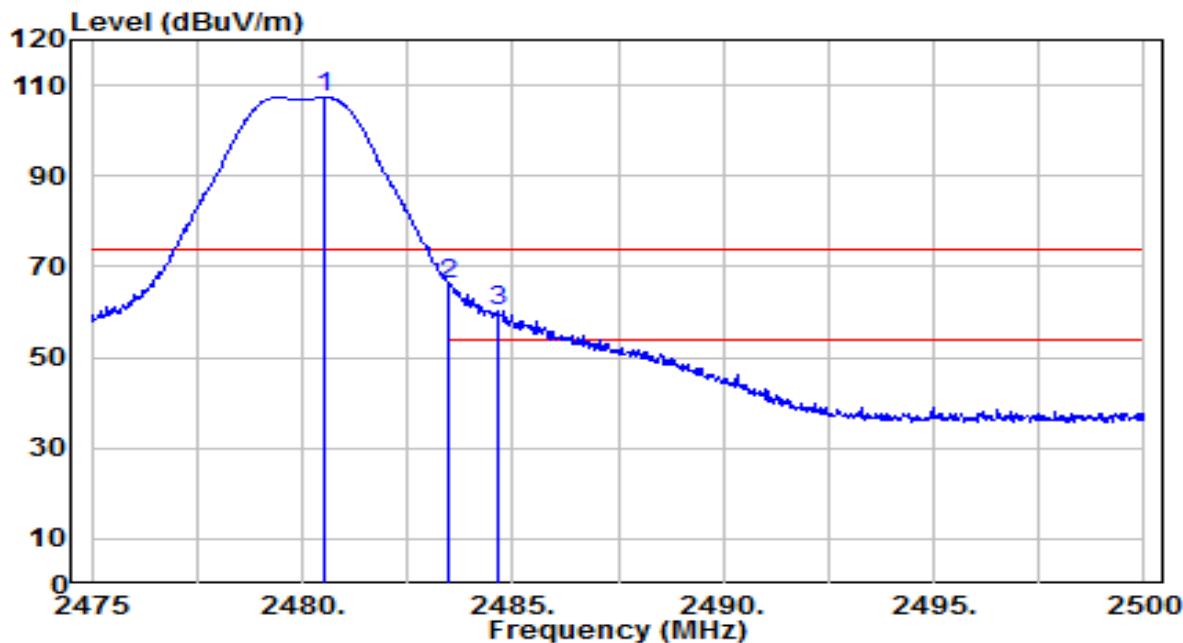


No	Frequency (MHz)	Reading (dBuV)	C.F (dB/m)	Measurement (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Height (cm)	Angle (deg)	Remark (QP/PK/AV)
1	2479.950	103.57	-1.74	101.82	N/A	N/A	140	260	Average
2 *	2483.500	53.49	-1.73	51.76	-2.24	54.00	140	260	Average
3	2484.550	47.00	-1.73	45.27	-8.73	54.00	140	260	Average

Note:

1. " *", means this data is the worst emission level.
2. C.F (Correction Factor) = Antenna Factor (dB/m) + Cable Loss (dB) – Preamplifier(dB).
3. Measurement (dBuV/m) = Reading(dBuV) + C.F (Correction Factor).
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

EUT	WiFi 7 Router	Date of Test	2025-02-18
Factor	BBHA 9120D	Temp. / Humidity	22°C /53%
Polarity	Vertical	Site / Test Engineer	AC1 / Todd
Test Mode	ZigBee_TX_CH 26	Test Voltage	AC 120V/60Hz

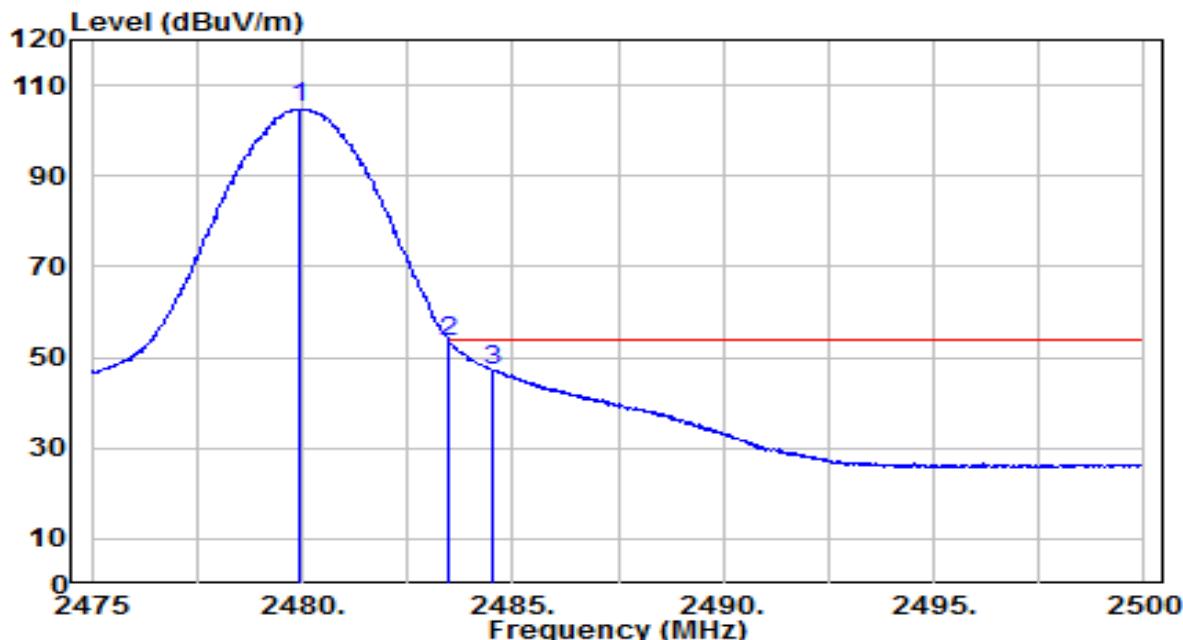


No	Frequency (MHz)	Reading (dBuV)	C.F (dB/m)	Measurement (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Height (cm)	Angle (deg)	Remark (QP/PK/AV)
1	2480.500	109.11	-1.74	107.37	N/A	N/A	150	285	Peak
2 *	2483.500	67.93	-1.73	66.20	-7.80	74.00	150	285	Peak
3	2484.625	62.16	-1.73	60.43	-13.57	74.00	150	285	Peak

Note:

1. **, means this data is the worst emission level.
2. C.F (Correction Factor) = Antenna Factor (dB/m) + Cable Loss (dB) – Preamplifier(dB).
3. Measurement (dBuV/m) = Reading(dBuV) + C.F (Correction Factor).
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

EUT	WiFi 7 Router	Date of Test	2025-02-18
Factor	BBHA 9120D	Temp. / Humidity	22°C /53%
Polarity	Vertical	Site / Test Engineer	AC1 / Todd
Test Mode	ZigBee_TX_CH 26	Test Voltage	AC 120V/60Hz



No	Frequency (MHz)	Reading (dBuV)	C.F (dB/m)	Measurement (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Height (cm)	Angle (deg)	Remark (QP/PK/AV)
1	2479.925	106.80	-1.74	105.06	N/A	N/A	150	285	Average
2 *	2483.500	55.18	-1.73	53.45	-0.55	54.00	150	285	Average
3	2484.525	48.95	-1.73	47.22	-6.78	54.00	150	285	Average

Note:

1. " *", means this data is the worst emission level.
2. C.F (Correction Factor) = Antenna Factor (dB/m) + Cable Loss (dB) – Preamplifier(dB).
3. Measurement (dBuV/m) = Reading(dBuV) + C.F (Correction Factor).
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

7.8. AC Conducted Emissions Measurement

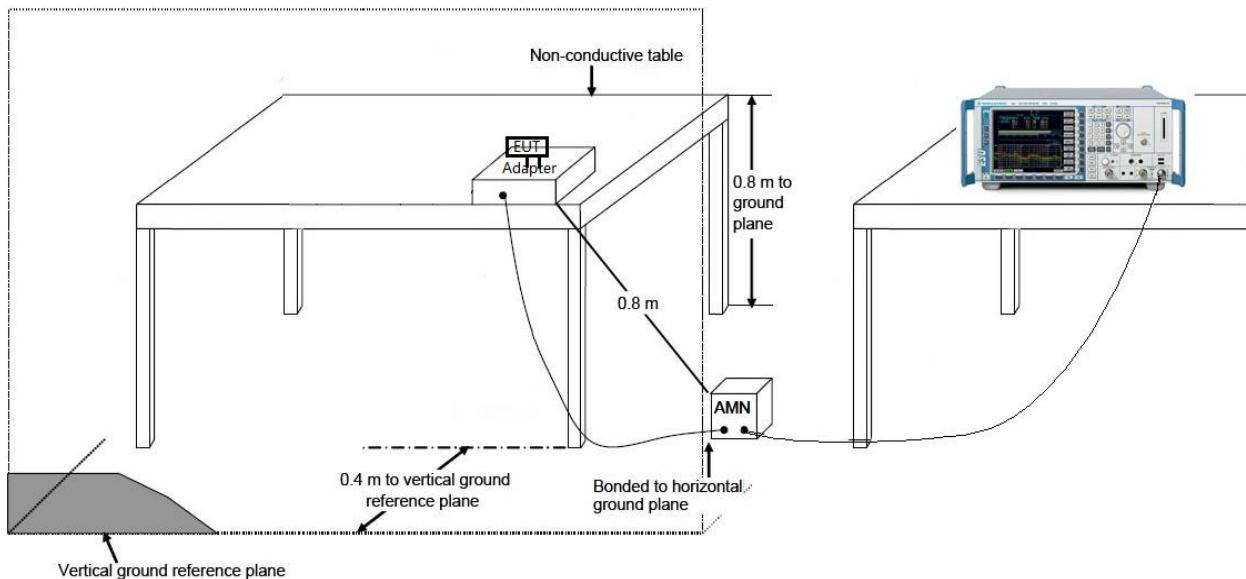
7.8.1. Test Limit

FCC Part 15 Subpart C Paragraph 15.207 / RSS-Gen Limits		
Frequency (MHz)	QP (dB μ V)	Average (dB μ V)
0.15 - 0.50	66 - 56	56 - 46
0.50 - 5.0	56	46
5.0 - 30	60	50

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

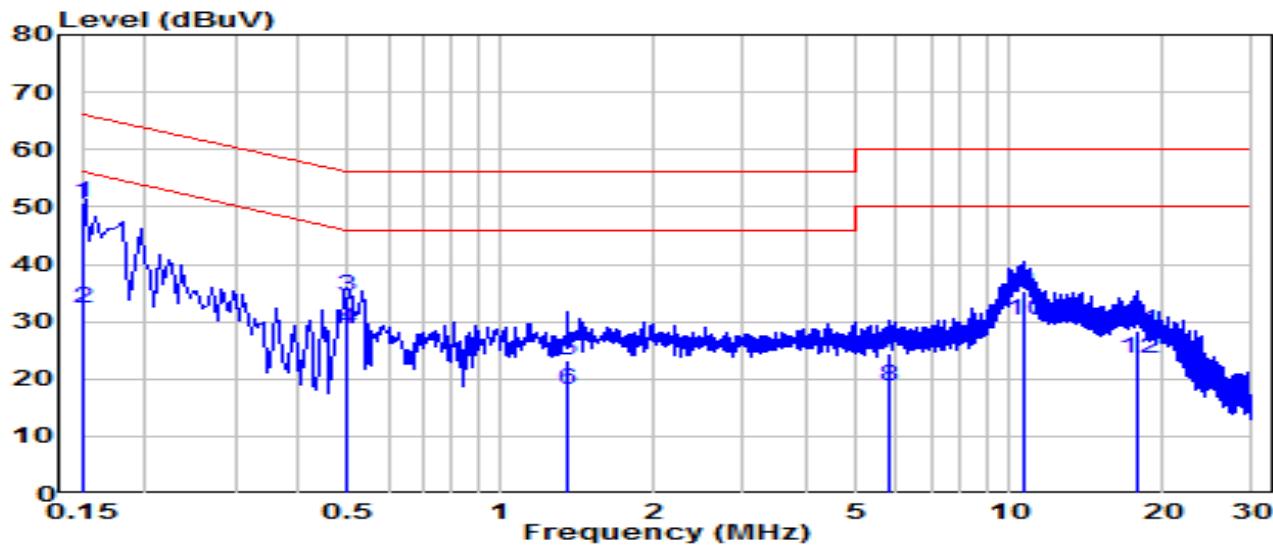
Note 2: The limit decreases linearly with the logarithm of the frequency in the range 0.15MHz to 0.5MHz.

7.8.2. Test Setup



7.8.3. Test Result

EUT	WiFi 7 Router	Date of Test	2025-02-19
Factor	CE_ENV216-L1 (Filter ON)	Temp. / Humidity	21.9°C /57%
Polarity	Line1	Site / Test Engineer	SR2 / Ryan
Test Mode	ZigBee_TX_CH 18	Test Voltage	AC 120V/60Hz

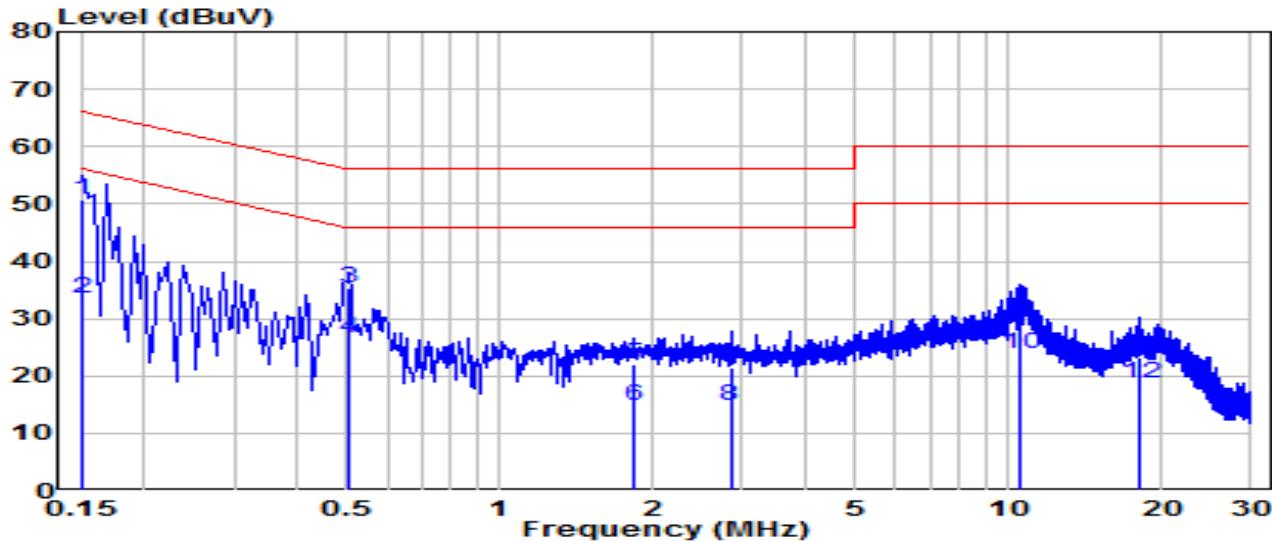


No	Frequency (MHz)	Reading (dBuV)	C.F (dB)	Measurement (dBuV)	Margin (dB)	Limit (dBuV)	Remark (QP/PK/AV)
1	0.150	41.13	9.63	50.76	-15.24	66.00	QP
2	0.150	22.55	9.63	32.18	-23.82	56.00	Average
3	0.496	24.91	9.65	34.56	-21.50	56.06	QP
4	0.496	19.06	9.65	28.71	-17.35	46.06	Average
5	1.347	13.45	9.69	23.14	-32.86	56.00	QP
6	1.347	8.35	9.69	18.04	-27.96	46.00	Average
7	5.779	14.69	9.77	24.45	-35.55	60.00	QP
8	5.779	9.08	9.77	18.85	-31.15	50.00	Average
9	10.746	25.42	9.87	35.29	-24.71	60.00	QP
10	10.746	20.27	9.87	30.14	-19.86	50.00	Average
11	17.950	18.51	9.92	28.44	-31.56	60.00	QP
12	17.950	13.68	9.92	23.61	-26.39	50.00	Average

Note:

1. "*", means this data is the worst emission level.
2. C.F (Correction Factor) = LISN Factor (dB) + Cable Loss (dB).
3. Measurement (dBuV) = Reading(dBuV) + C.F (Correction Factor).

EUT	WiFi 7 Router	Date of Test	2025-02-19
Factor	CE_ENV216-N (Filter ON)	Temp. / Humidity	21.9°C /57%
Polarity	Neutral	Site / Test Engineer	SR2 / Ryan
Test Mode	ZigBee_TX_CH 18	Test Voltage	AC 120V/60Hz



No	Frequency (MHz)	Reading (dBuV)	C.F (dB)	Measurement (dBuV)	Margin (dB)	Limit (dBuV)	Remark (QP/PK/AV)
1	0.150	41.21	9.63	50.84	-15.16	66.00	QP
2	0.150	23.92	9.63	33.55	-22.45	56.00	Average
3	0.505	25.77	9.65	35.42	-20.58	56.00	QP
4	0.505	16.77	9.65	26.42	-19.58	46.00	Average
5	1.833	12.41	9.70	22.12	-33.88	56.00	QP
6	1.833	5.14	9.70	14.85	-31.15	46.00	Average
7	2.841	11.85	9.72	21.57	-34.43	56.00	QP
8	2.841	4.95	9.72	14.67	-31.33	46.00	Average
9	10.562	19.90	9.90	29.79	-30.21	60.00	QP
10	10.562	14.00	9.90	23.89	-26.11	50.00	Average
11	18.013	13.31	9.98	23.29	-36.71	60.00	QP
12	18.013	8.77	9.98	18.75	-31.25	50.00	Average

Note:

1. **, means this data is the worst emission level.
2. C.F (Correction Factor) = LISN Factor (dB) + Cable Loss (dB).
3. Measurement (dBuV) = Reading(dBuV) + C.F (Correction Factor).

8. CONCLUSION

The data collected relate only to the item(s) tested and show that the **WiFi 7 Router** is in compliance with Part 15C of the FCC Rules.

Appendix A : Test Photograph

Refer to “2502TW0106-UT” file.

Appendix B : External Photograph

Refer to “2502TW0106-UE” file.

Appendix C : Internal Photograph

Refer to “2502TW0106-UI” file.

The End
