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Report No.: 2407TWU102-U2
Report Version: 1.0
Issue Date: 2025-05-13

MEASUREMENT REPORT

FCC ID	:	**INGUF-20DA**
APPLICANT	:	**JTS PROFESSIONAL CO., LTD.**
Application Type	:	**Certification**
Product	:	**Wireless Receiver**
Model No.	:	**UF-20 DA**
Brand Name	:	**JTS**
Trademark	:	JTS®
FCC Classification	:	**(DTS) Digital Transmission System**
FCC Rule Part(s)	:	**Part 15.249**
Test Procedure(s)	:	**ANSI C63.10-2013**
Received Date	:	**July 10, 2024**
Test Date	:	**October 24, 2024 ~ January 1, 2025**

Tested By : Kaunaz Lee
(Kaunaz Lee)

Reviewed By : Paddy Chen
(Paddy Chen)

Approved By : Chenz Ker
(Chenz Ker)

ilac-MRA

TAF
Testing Laboratory
3261

The test results only relate to the tested samples.

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.

Revision History

Report No.	Version	Description	Issue Date	Note
2407TWU102-U1	1.0	Original Report	2025-05-13	

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Description Page

General Information

Applicant	JTS PROFESSIONAL CO., LTD.
Applicant Address	No. 148, Gongye 9th Rd., Dali Dist., Taichung City 412037, Taiwan
Manufacturer	JTS PROFESSIONAL CO., LTD.
Manufacturer Address	No. 148, Gongye 9th Rd., Dali Dist., Taichung City 412037, Taiwan
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 15.249
Test Device Serial No.	#1-1 ☐ Production ☒ Pre-Production ☐ Engineering

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 Taiwan, EU and TELEC Rules.

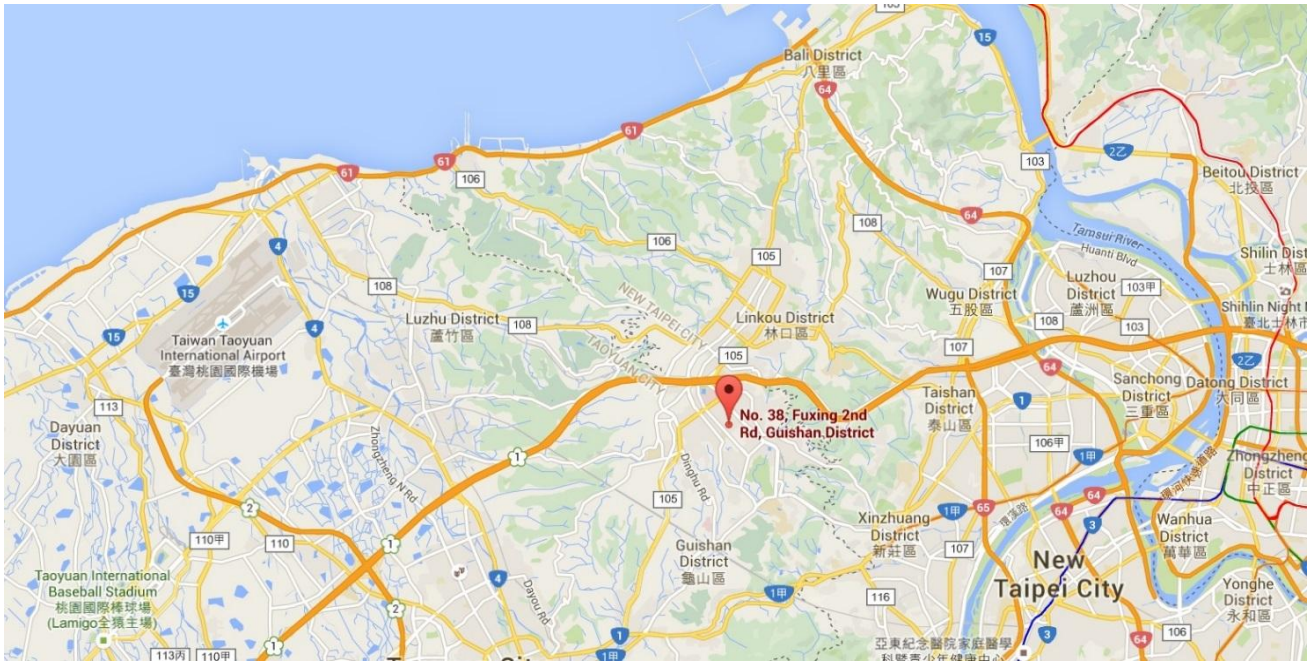
1. INTRODUCTION

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	Wireless Receiver
Model No.	UF-20 DA

2.2. Product Specification Subjective to this Standard

Operating Frequency	2412MHz~2424MHz
Specification	SRD 2.4GHz
Type of modulation	FSK

2.3. Test Mode

Test Mode	Mode 1: Transmit by SRD 2.4GHz

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	Channel	Frequency
01	2412 MHz	02	2416 MHz	03	2420 MHz
04	2424 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.

2.6. Test Software

The test utility software used during testing was “Engineering Mode”.

2.7. EMI Suppression Device(s)/Modifications

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

2.8. 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 of Procedures for Compliance Testing of Unlicensed Wireless Devices (ANSI C63.10-2013), and the guidance was used in the measurement**.**

Deviation from measurement procedure…….....None

3.2. 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 **Wireless Receiver,** is permanently attached.
- There are no provisions for connection to an external antenna.

Conclusion:

The EUT unit complies with the requirement of §15.203.

Antenna List

No.	Manufacturer	Part No.	Antenna Type	Peak Gain
1	ACX	AT3216-B2R7HAA	Chip	0.5dBi

5. TEST EQUIPMENT CALIBRATION DATE

Conducted Emissions – SR2

Instrument	Manufacturer	Type No.	Asset No.	Cali. Interval	Cali. Due Date
Two-Line V-Network	R&S	ENV216	MRTTWA00019	1 year	2026/3/5
Cable	Rosnol	N1C50-RG400-B 1C50-500CM	MRTTWE00013	1 year	2025/6/14
EMI Test Receiver	R&S	ESR3	MRTTWA00009	1 year	2026/3/4

Radiated Emissions – AC1

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	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

Test Software

Software	Version	Function
e3	9.160520a	EMI Test Software
EMI	V3	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=2Uc(y)): 0.15MHz~30MHz: ± 2.53dB
Conducted Measurement
Measuring Uncertainty for a Level of Confidence of 95% (U=2Uc(y)): ± 1.3dB
Radiated Spurious Emission
Measuring Uncertainty for a Level of Confidence of 95% (U=2Uc(y)): 9kHz~30MHz: ± 3.92dB 30MHz~1GHz: ± 4.25dB 1GHz~18GHz: ± 4.40dB 18GHz~40GHz: ± 4.45dB

7. TEST RESULT

7.1. Summary

Product Name: **Wireless Receiver**

FCC Classification: **(DTS) Digital Transmission System**

FCC Part Section(s)	Test Description	Test Limit	Test Condition	Test Result	Reference
15.205 15.209	Spurious Emission	< FCC 15.209 limits	Radiated	Pass	Section 7.2
15.205 15.209	Band Edge Measurement	≦ 74dBuV/m(Peak) ≦54dBuV/m(Average)		Pass	Section 7.3
15.249	Field strength of fundamental	< FCC 15.249 limits		Pass	Section 7.4
15.207	AC Conducted Emissions 150kHz - 30MHz	< FCC 15.207 limits	Line Conducted	Pass	Section 7.5

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) All modes of operation and data rates were investigated. For radiated emission test, every axis (X, Y, Z) was also verified. 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.
4) All antenna port conducted emissions testing was performed on a test bench with the antenna port of the EUT connected to the spectrum analyzer through calibrated cables and attenuators.

7.2. Radiated Spurious Emission Measurement

7.2.1. 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

7.2.2. Test Procedure Used

ANSI C63.10 - 2013 Section 11.11 & 11.12

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)

7.2.3. 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

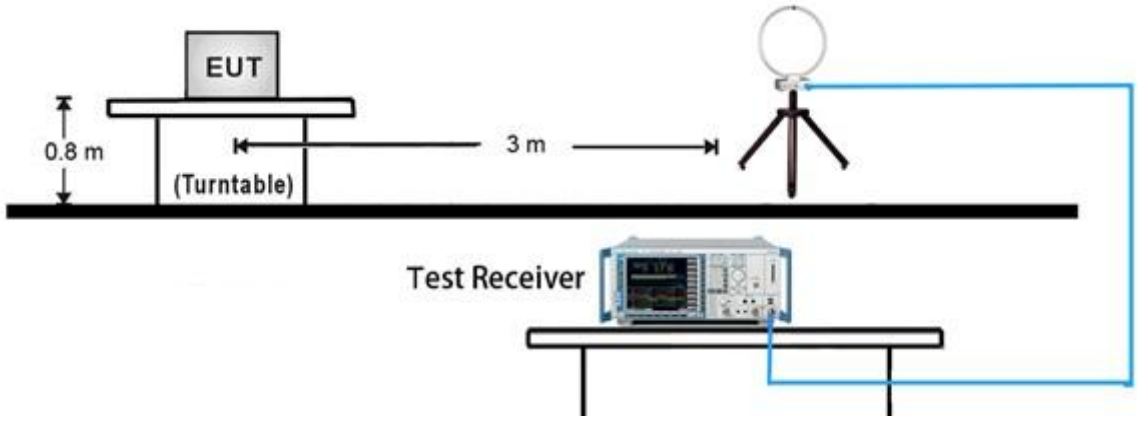
Frequency	RBW
9 ~ 150 kHz	200 ~ 300 Hz
0.15 ~ 30 MHz	9 ~ 10 kHz
30 ~ 1000 MHz	100 ~ 120 kHz
> 1000 MHz	1 MHz

Average Field Strength Measurements

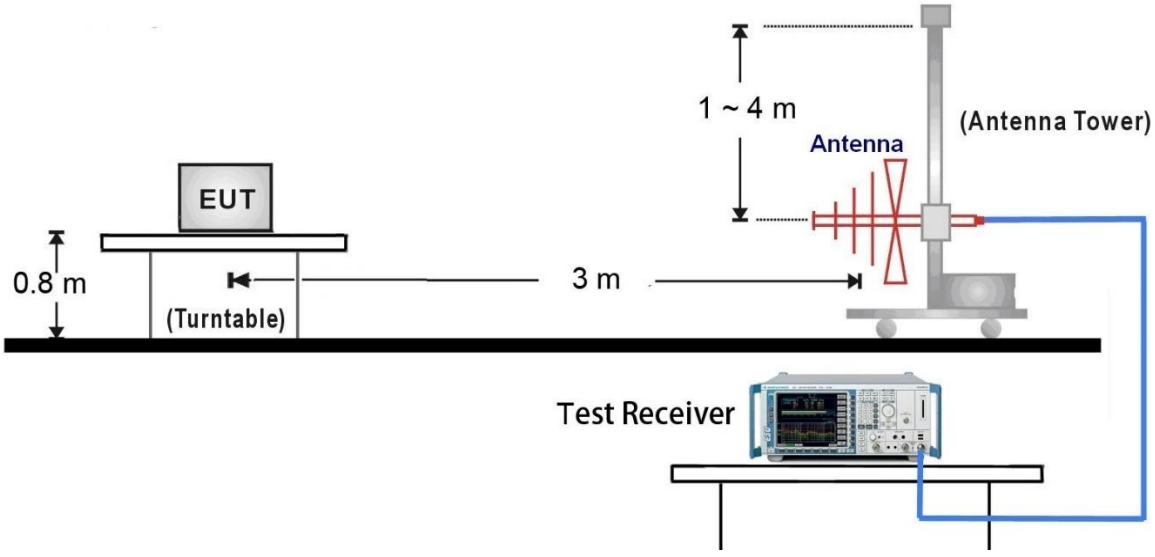
1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest
2. RBW = 1MHz
3. VBW ≥ 1/T
4. De As an alternative, the instrument may be set to linear detector mode. Ensure that video filtering is applied in linear voltage domain (rather than in a log or dB domain). 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

7.2.4. Test Setup

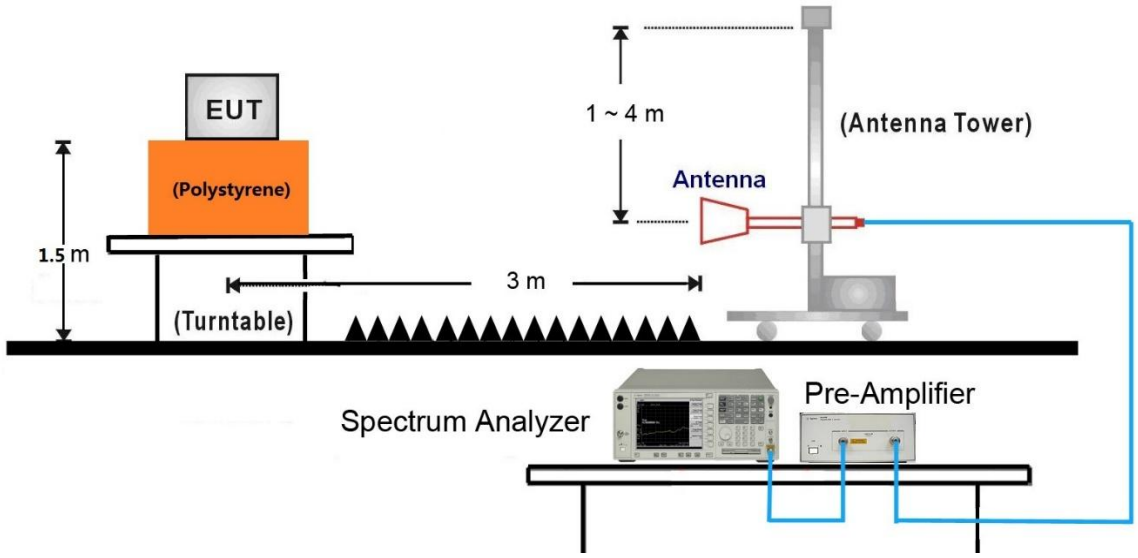
9kHz ~ 30MHz Test Setup:



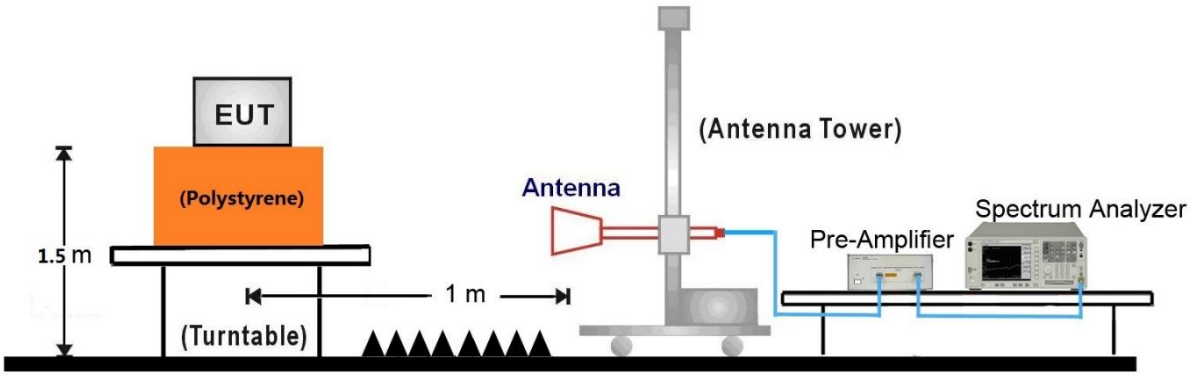
30MHz ~ 1GHz Test Setup:



1GHz ~ 18GHz Test Setup:

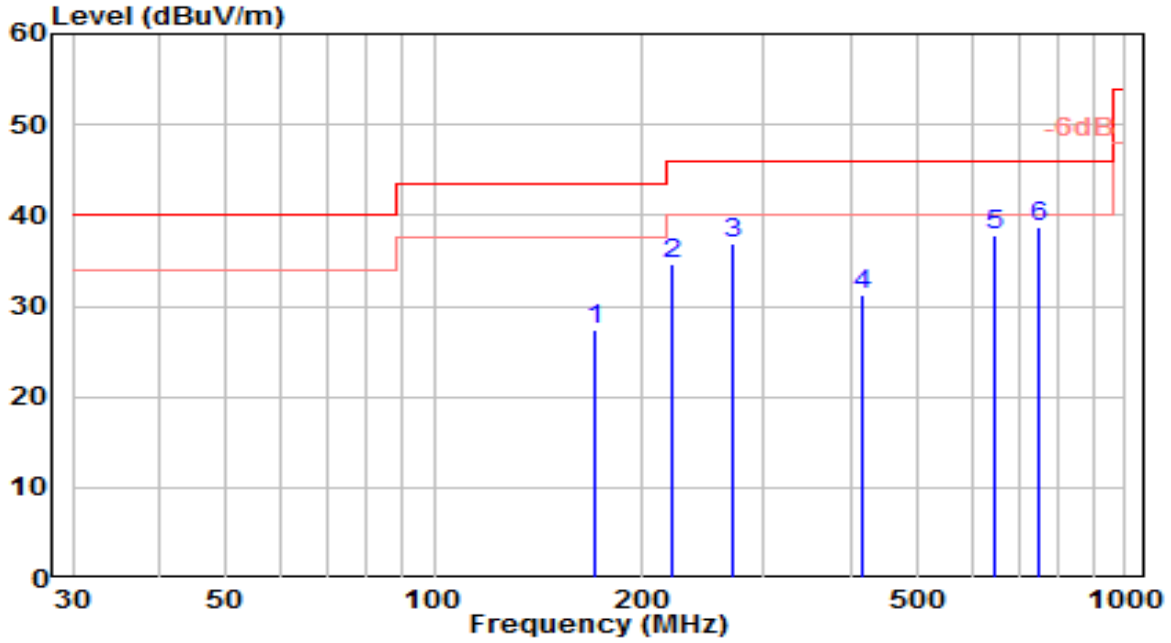


18GHz ~25GHz Test Setup:



7.2.5. Test Result

EUT	Wireless Receiver	Date of Test	2025-01-01
Factor	VULB 9162	Temp. / Humidity	23°C /67%
Polarity	Horizontal	Site / Test Engineer	AC1 / Todd
Test Mode	SRD 2.4G_TX_2424MHz	Test Voltage	AC 120V/60Hz

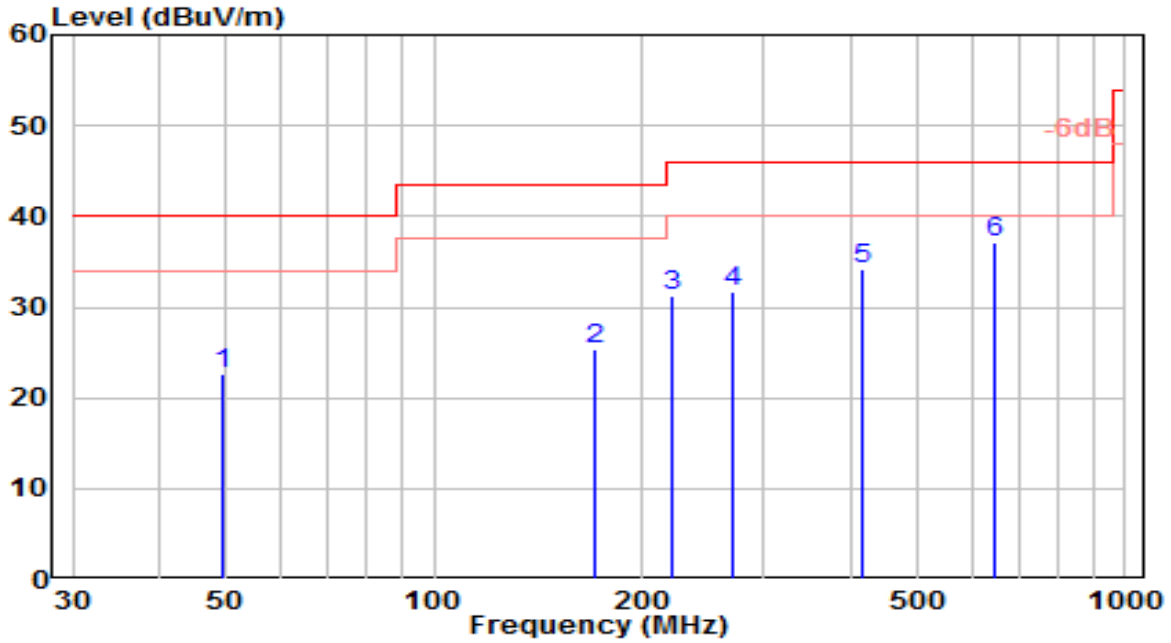


No		Frequency (MHz)	Reading (dBuV)	C.F (dB/m)	Measurement (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Height (cm)	Angle (deg)	Remark (QP/PK/AV)
1		171.620	11.01	16.43	27.44	-16.06	43.50	150	115	QP
2		221.090	15.71	19.00	34.71	-11.29	46.00	150	205	QP
3		270.560	16.32	20.49	36.81	-9.19	46.00	100	280	QP
4		418.000	7.31	23.99	31.29	-14.71	46.00	150	260	QP
5		649.830	11.04	26.70	37.74	-8.26	46.00	150	140	QP
6	*	750.710	9.18	29.60	38.78	-7.22	46.00	100	120	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.

EUT	Wireless Receiver	Date of Test	2025-01-01
Factor	VULB 9162	Temp. / Humidity	23°C /67%
Polarity	Vertical	Site / Test Engineer	AC1 / Todd
Test Mode	SRD 2.4G_TX_2424MHz	Test Voltage	AC 120V/60Hz

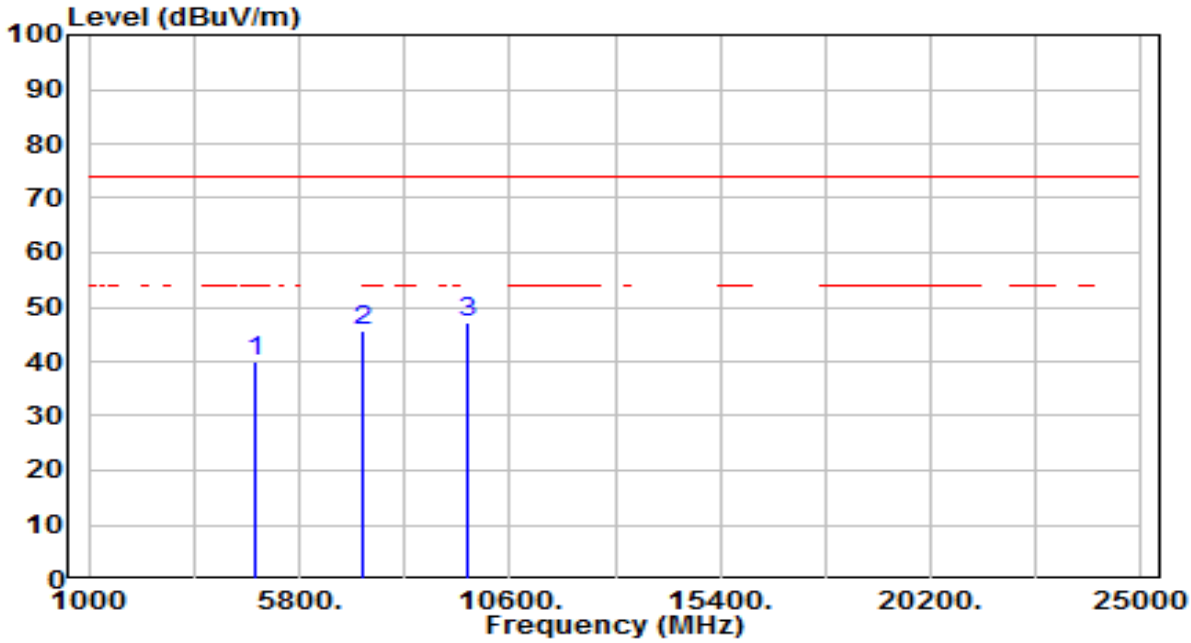


No		Frequency (MHz)	Reading (dBuV)	C.F (dB/m)	Measurement (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Height (cm)	Angle (deg)	Remark (QP/PK/AV)
1		49.400	1.38	21.21	22.59	-17.41	40.00	100	85	QP
2		171.620	8.82	16.43	25.25	-18.25	43.50	100	185	QP
3		221.090	12.15	19.00	31.14	-14.86	46.00	150	125	QP
4		270.560	11.28	20.49	31.77	-14.23	46.00	150	215	QP
5		418.000	10.13	23.99	34.12	-11.88	46.00	150	200	QP
6	*	649.830	10.32	26.70	37.02	-8.98	46.00	150	210	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.

EUT	Wireless Receiver	Date of Test	2025-01-01
Factor	BBHA 9120D & BBHA 9170	Temp. / Humidity	23°C /67%
Polarity	Horizontal	Site / Test Engineer	AC1 / Todd
Test Mode	SRD 2.4G_TX_2412MHz	Test Voltage	AC 120V/60Hz

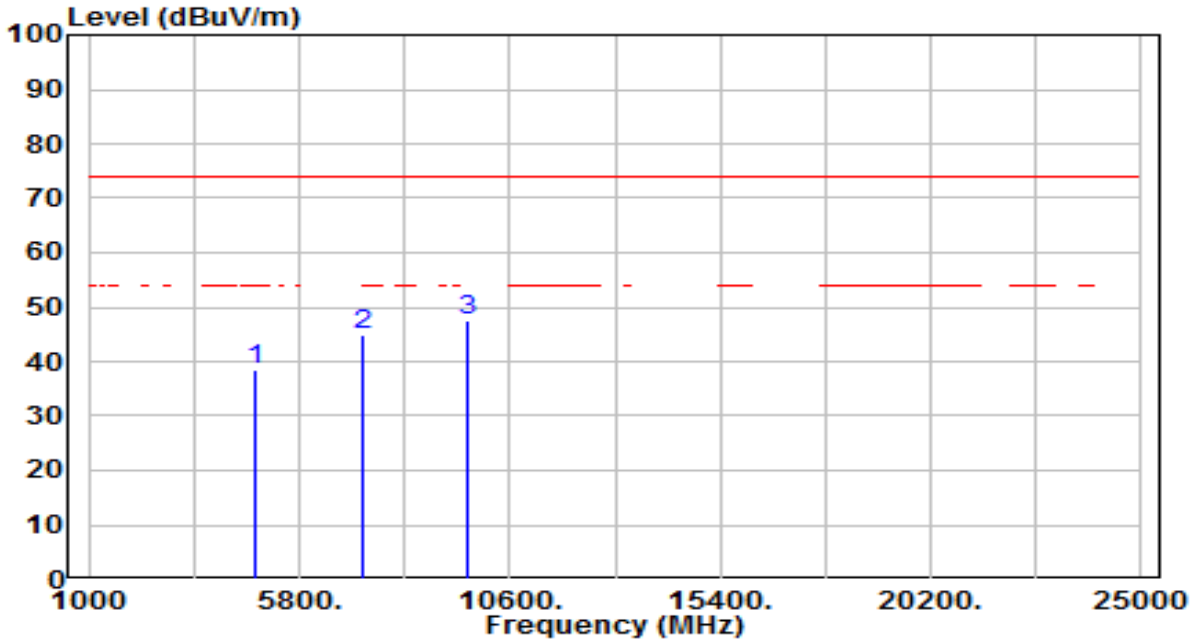


No		Frequency (MHz)	Reading (dBuV)	C.F (dB/m)	Measurement (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Height (cm)	Angle (deg)	Remark (QP/PK/AV)
1		4824.100	36.13	3.75	39.88	-34.12	74.00	200	159	Peak
2		7236.150	34.02	11.68	45.70	-28.30	74.00	200	205	Peak
3	*	9648.200	31.44	15.77	47.21	-26.79	74.00	200	117	Peak

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	Wireless Receiver	Date of Test	2025-01-01
Factor	BBHA 9120D & BBHA 9170	Temp. / Humidity	23°C /67%
Polarity	Vertical	Site / Test Engineer	AC1 / Todd
Test Mode	SRD 2.4G_TX_2412MHz	Test Voltage	AC 120V/60Hz

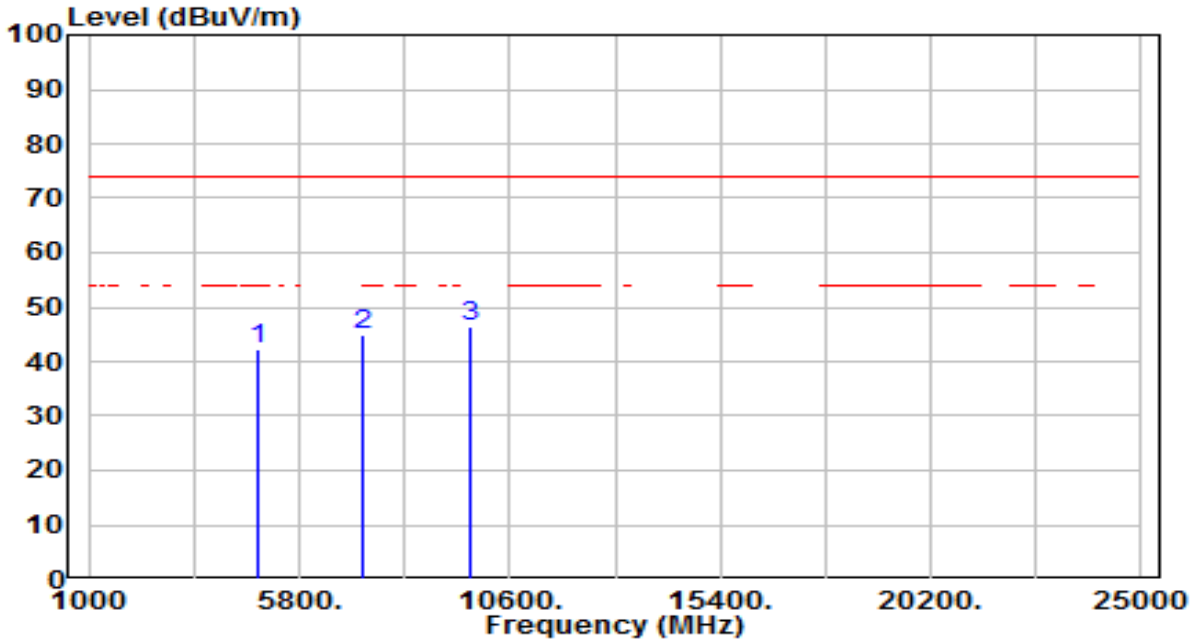


No		Frequency (MHz)	Reading (dBuV)	C.F (dB/m)	Measurement (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Height (cm)	Angle (deg)	Remark (QP/PK/AV)
1		4824.100	34.62	3.75	38.37	-35.63	74.00	200	284	Peak
2		7236.150	33.08	11.68	44.76	-29.24	74.00	200	337	Peak
3	*	9648.200	31.60	15.77	47.37	-26.63	74.00	200	124	Peak

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	Wireless Receiver	Date of Test	2025-01-01
Factor	BBHA 9120D & BBHA 9170	Temp. / Humidity	23°C /67%
Polarity	Horizontal	Site / Test Engineer	AC1 / Todd
Test Mode	SRD 2.4G_TX_2424MHz	Test Voltage	AC 120V/60Hz

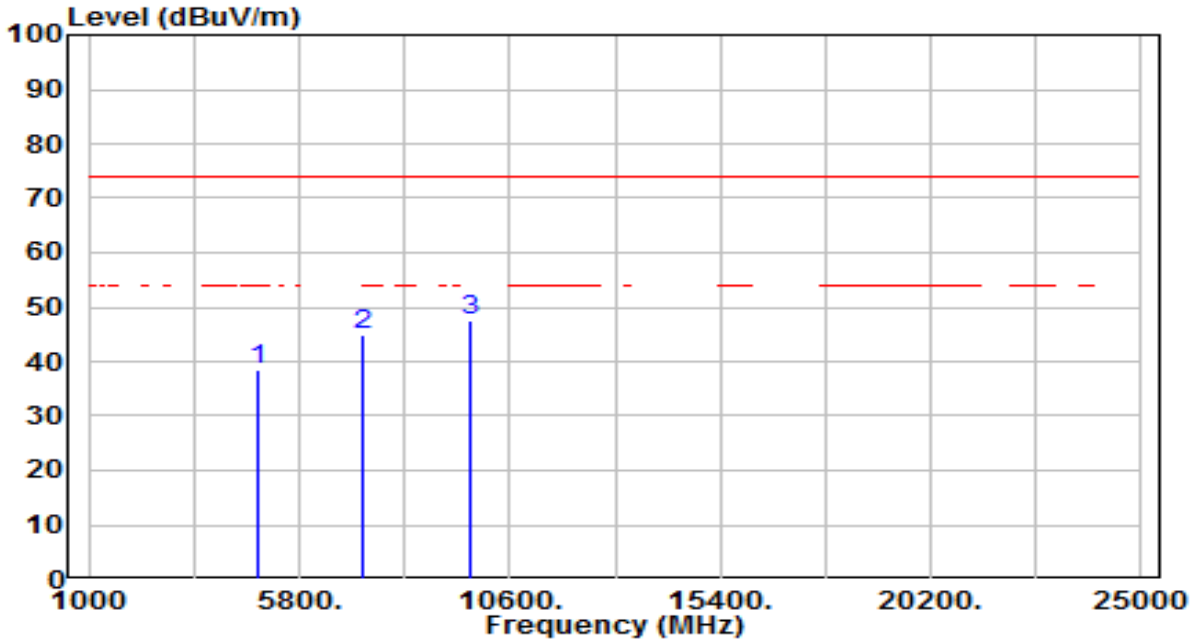


No		Frequency (MHz)	Reading (dBuV)	C.F (dB/m)	Measurement (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Height (cm)	Angle (deg)	Remark (QP/PK/AV)
1		4840.100	38.31	3.78	42.08	-31.92	74.00	200	166	Peak
2		7260.150	33.26	11.76	45.02	-28.98	74.00	200	184	Peak
3	*	9680.200	30.69	15.83	46.52	-27.48	74.00	200	208	Peak

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	Wireless Receiver	Date of Test	2025-01-01
Factor	BBHA 9120D & BBHA 9170	Temp. / Humidity	23°C /67%
Polarity	Vertical	Site / Test Engineer	AC1 / Todd
Test Mode	SRD 2.4G_TX_2424MHz	Test Voltage	AC 120V/60Hz

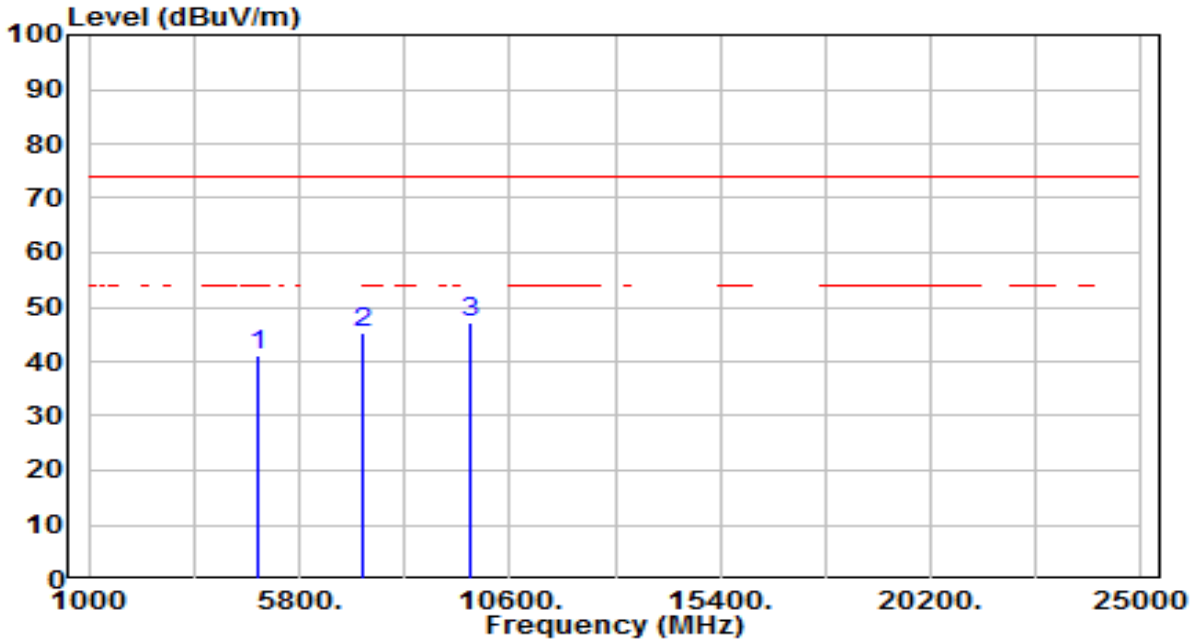


No		Frequency (MHz)	Reading (dBuV)	C.F (dB/m)	Measurement (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Height (cm)	Angle (deg)	Remark (QP/PK/AV)
1		4840.100	34.60	3.78	38.38	-35.62	74.00	200	286	Peak
2		7260.150	32.98	11.76	44.74	-29.26	74.00	200	269	Peak
3	*	9680.200	31.54	15.83	47.37	-26.63	74.00	200	248	Peak

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	Wireless Receiver	Date of Test	2025-01-01
Factor	BBHA 9120D & BBHA 9170	Temp. / Humidity	23°C /67%
Polarity	Horizontal	Site / Test Engineer	AC1 / Todd
Test Mode	SRD 2.4G_TX_2424MHz	Test Voltage	AC 120V/60Hz

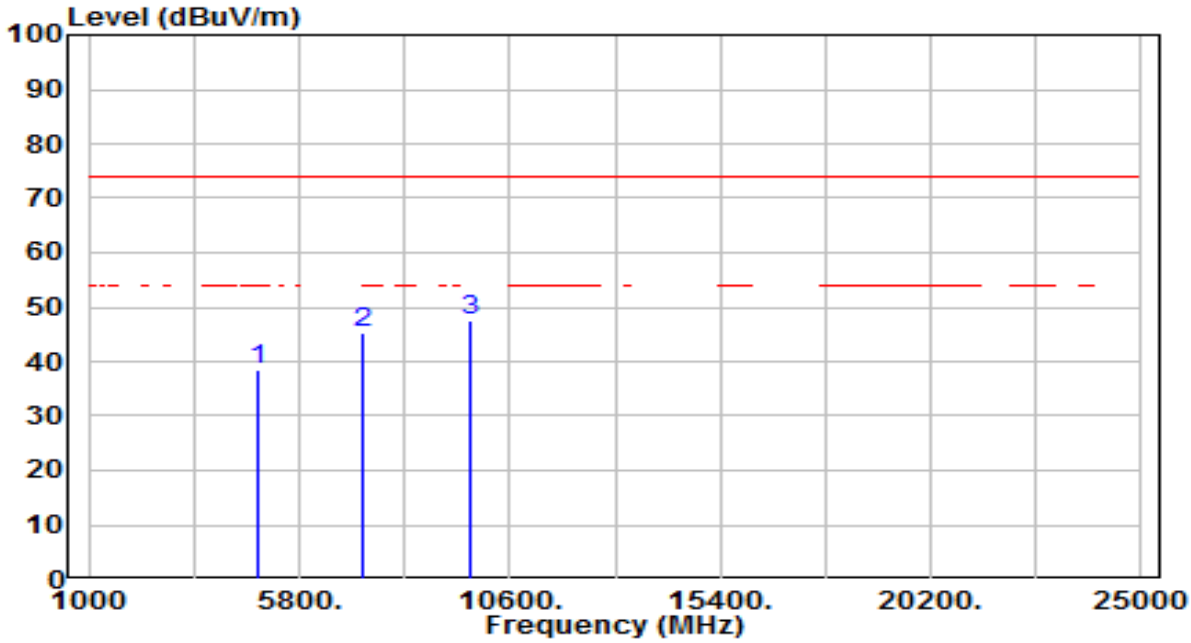


No		Frequency (MHz)	Reading (dBuV)	C.F (dB/m)	Measurement (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Height (cm)	Angle (deg)	Remark (QP/PK/AV)
1		4848.100	37.35	3.79	41.14	-32.86	74.00	200	169	Peak
2		7272.150	33.62	11.80	45.42	-28.58	74.00	200	173	Peak
3	*	9696.200	31.26	15.86	47.11	-26.89	74.00	200	62	Peak

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	Wireless Receiver	Date of Test	2025-01-01
Factor	BBHA 9120D & BBHA 9170	Temp. / Humidity	23°C /67%
Polarity	Vertical	Site / Test Engineer	AC1 / Todd
Test Mode	SRD 2.4G_TX_2424MHz	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		4848.100	34.70	3.79	38.49	-35.51	74.00	200	215	Peak
2		7272.150	33.64	11.80	45.44	-28.56	74.00	200	90	Peak
3	*	9696.200	31.54	15.86	47.40	-26.60	74.00	200	340	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.

7.3. Radiated Restricted Band Edge Measurement

7.3.1. 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

7.3.2. Test Procedure Used

ANSI C63.10-2013 - Section 11.12.1

7.3.3. 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 * 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

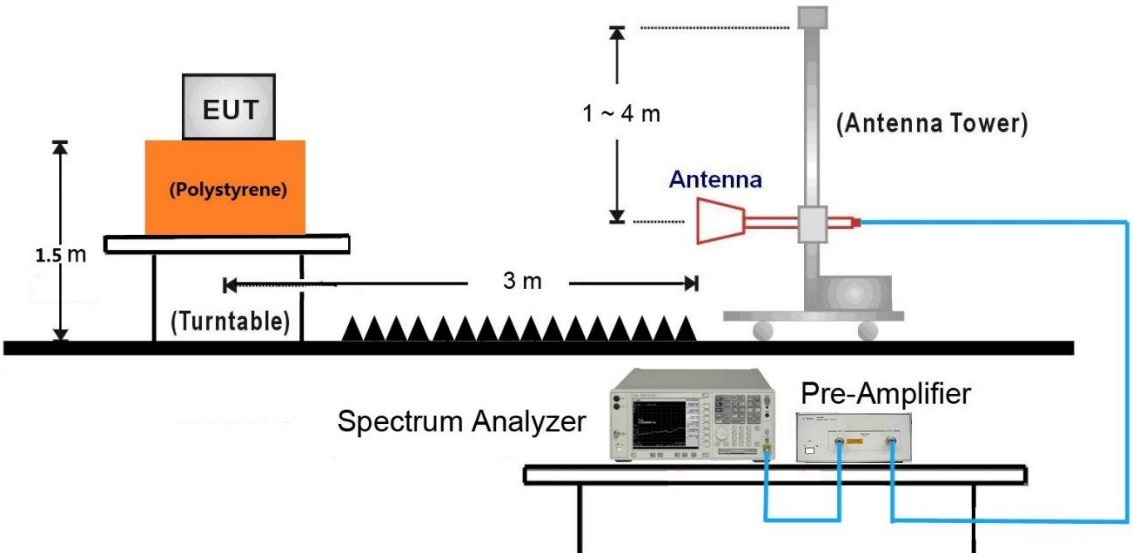
Frequency	RBW
9 ~ 150 kHz	200 ~ 300 Hz
0.15 ~ 30 MHz	9 ~ 10 kHz
30 ~ 1000 MHz	100 ~ 120 kHz
> 1000 MHz	1 MHz

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 ≥ 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

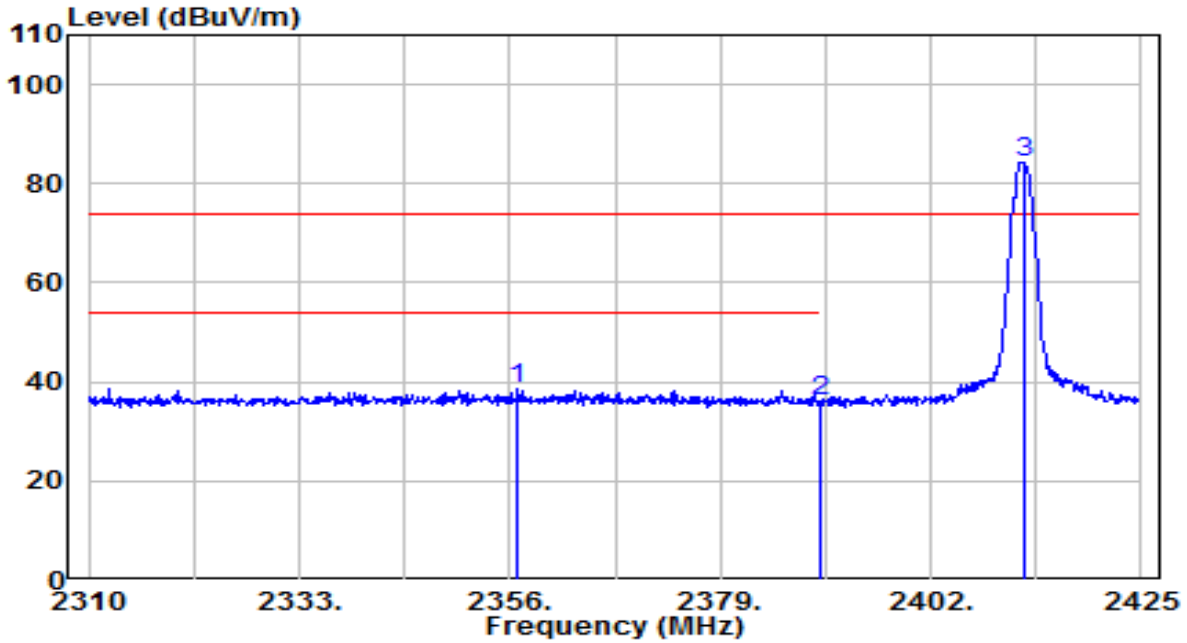
7.3.4. Test Setup

1GHz ~ 18GHz Test Setup:



7.3.5. Test Result

EUT	Wireless Receiver	Date of Test	2025-01-01
Factor	BBHA 9120D	Temp. / Humidity	23°C /67%
Polarity	Horizontal	Site / Test Engineer	AC1 / Todd
Test Mode	SRD 2.4G_TX_2412MHz	Test Voltage	AC 120V/60Hz

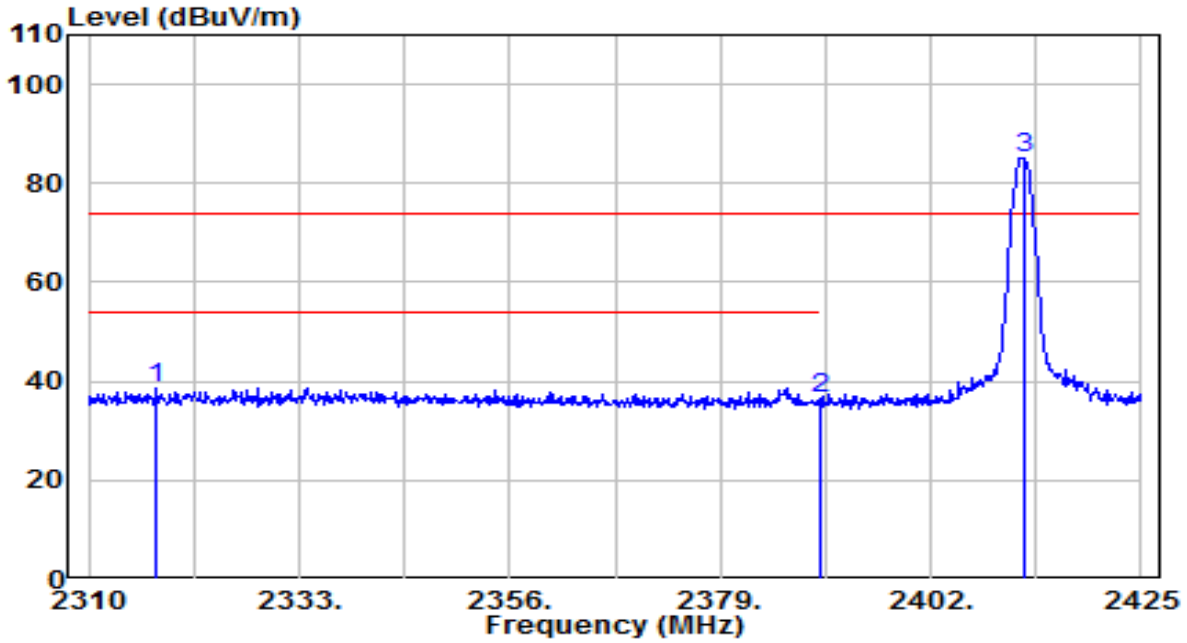


No		Frequency (MHz)	Reading (dBuV)	C.F (dB/m)	Measurement (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Height (cm)	Angle (deg)	Remark (QP/PK/AV)
1	*	2356.805	40.71	-2.13	38.57	-35.43	74.00	130	115	Peak
2		2390.000	38.32	-2.03	36.30	-37.70	74.00	130	115	Peak
3		2412.120	86.35	-1.96	84.39	N/A	N/A	130	115	Peak

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	Wireless Receiver	Date of Test	2025-01-01
Factor	BBHA 9120D	Temp. / Humidity	23°C /67%
Polarity	Vertical	Site / Test Engineer	AC1 / Todd
Test Mode	SRD 2.4G_TX_2412MHz	Test Voltage	AC 120V/60Hz

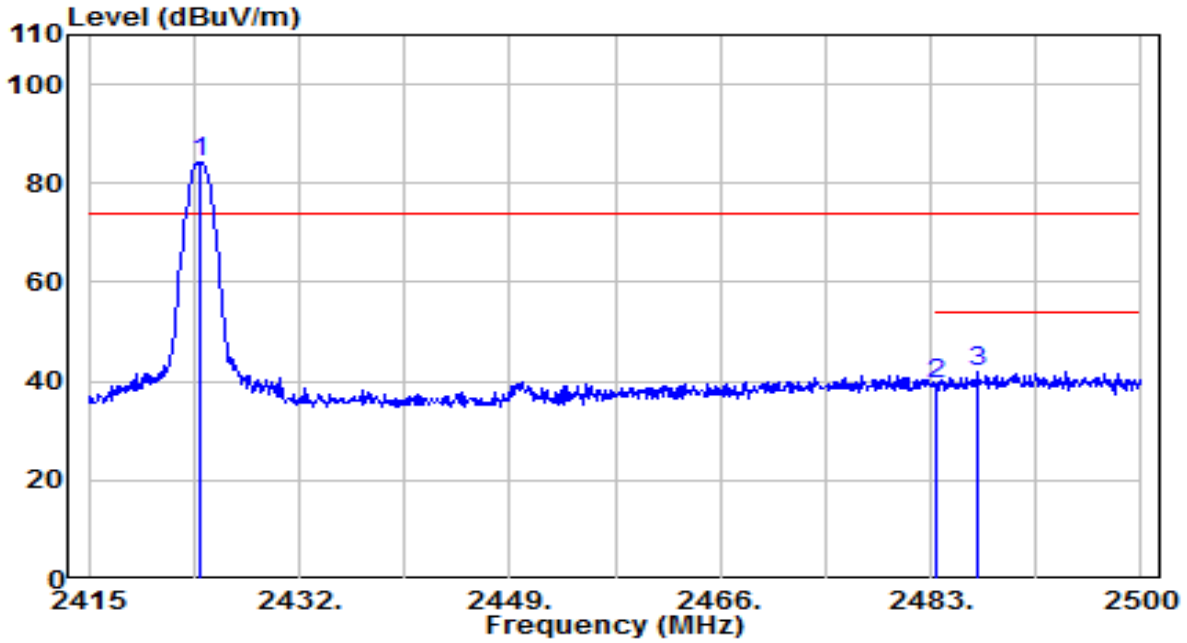


No		Frequency (MHz)	Reading (dBuV)	C.F (dB/m)	Measurement (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Height (cm)	Angle (deg)	Remark (QP/PK/AV)
1	*	2317.360	41.03	-2.26	38.77	-35.23	74.00	100	185	Peak
2		2390.000	38.70	-2.03	36.67	-37.33	74.00	100	185	Peak
3		2412.120	87.12	-1.96	85.16	N/A	N/A	100	185	Peak

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	Wireless Receiver	Date of Test	2025-01-01
Factor	BBHA 9120D	Temp. / Humidity	23°C /67%
Polarity	Horizontal	Site / Test Engineer	AC1 / Todd
Test Mode	SRD 2.4G_TX_2424MHz	Test Voltage	AC 120V/60Hz

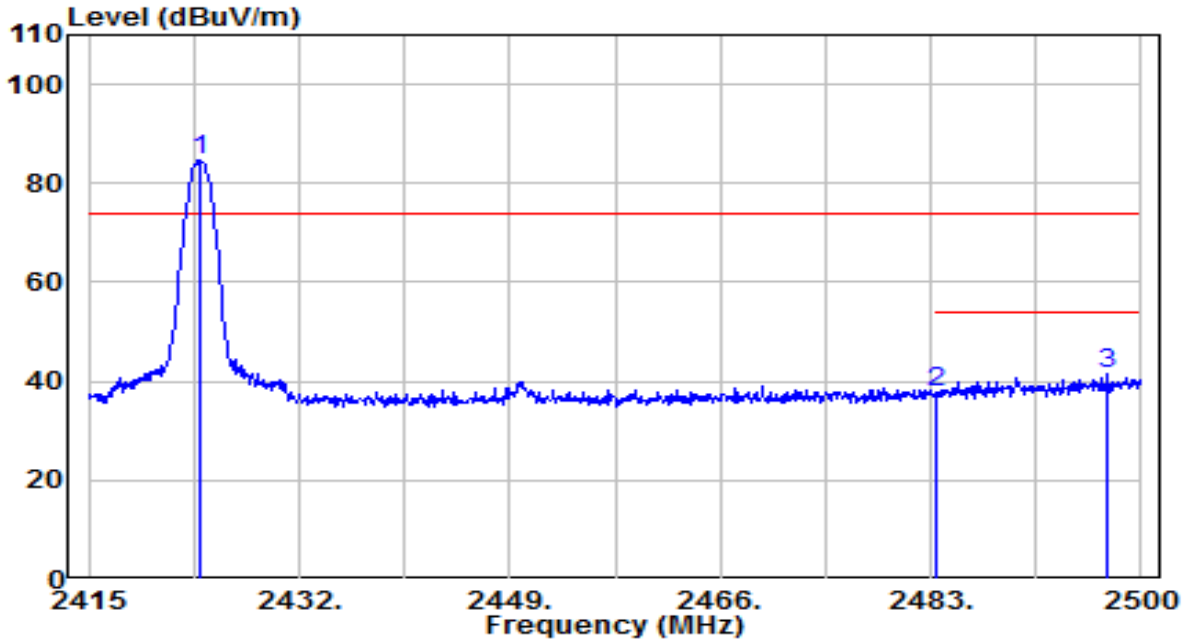


No		Frequency (MHz)	Reading (dBuV)	C.F (dB/m)	Measurement (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Height (cm)	Angle (deg)	Remark (QP/PK/AV)
1		2424.010	86.24	-1.92	84.32	N/A	N/A	140	125	Peak
2		2483.500	40.97	-1.73	39.24	-34.76	74.00	140	125	Peak
3	*	2486.740	43.72	-1.72	42.00	-32.00	74.00	140	125	Peak

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	Wireless Receiver	Date of Test	2025-01-01
Factor	BBHA 9120D	Temp. / Humidity	23°C /67%
Polarity	Vertical	Site / Test Engineer	AC1 / Todd
Test Mode	SRD 2.4G_TX_2424MHz	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		2424.010	86.43	-1.92	84.51	N/A	N/A	100	175	Peak
2		2483.500	39.38	-1.73	37.65	-36.35	74.00	100	175	Peak
3	*	2497.280	43.27	-1.69	41.58	-32.42	74.00	100	175	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.

7.4. Field strength of fundamental

7.4.1. Test Limit

(a) Except as provided in paragraph (b) of this section, the field strength of emissions from intentional radiators operated within these frequency bands shall comply with the following:

FCC Part 15 Subpart C Paragraph 15.249		
Frequency [MHz]	Field Strength of Fundamental [Millivolts/Meter]	Field Strength of Harmonics [Millivolts/Meter]
902-928	50	500
2400-2483.5	50	500
5725-5875	50	500
24000-24250	250	2500

7.4.2. Test Procedure Used

ANSI C63.10-2013 - Section 11.12.1

7.4.3. Test Setting

Peak Field Strength Measurements

8. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest
9. RBW = as specified in Table 1
10. VBW = 3 * RBW
11. Detector = peak
12. Sweep time = auto couple
13. Trace mode = max hold
14. Trace was allowed to stabilize

Table 1 - RBW as a function of frequency

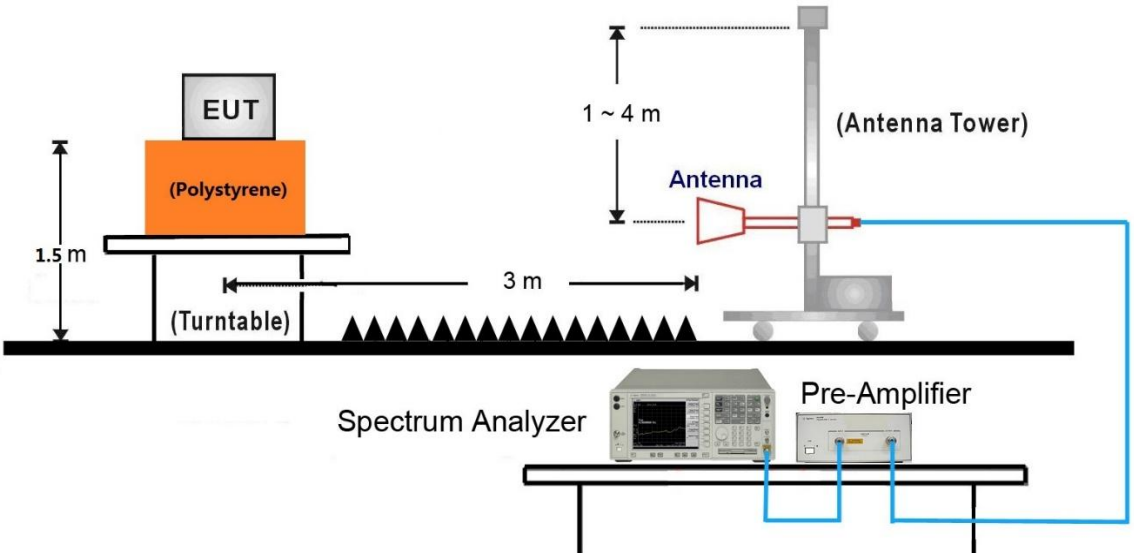
Frequency	RBW
9 ~ 150 kHz	200 ~ 300 Hz
0.15 ~ 30 MHz	9 ~ 10 kHz
30 ~ 1000 MHz	100 ~ 120 kHz
> 1000 MHz	1 MHz

Average Field Strength Measurements

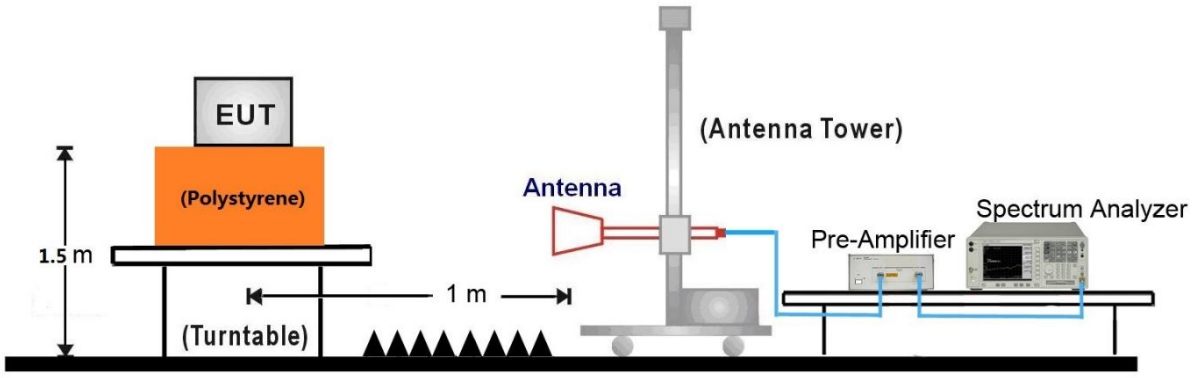
9. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest
10. RBW = 1MHz
11. VBW ≥ 1/T
12. De As an alternative, the instrument may be set to linear detector mode. Ensure that video filtering is applied in linear voltage domain (rather than in a log or dB domain). 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
13. Detector = Peak
14. Sweep time = auto
15. Trace mode = max hold
16. Allow max hold to run for at least 50 times (1/duty cycle) traces

7.4.4. Test Setup

1GHz ~ 18GHz Test Setup:

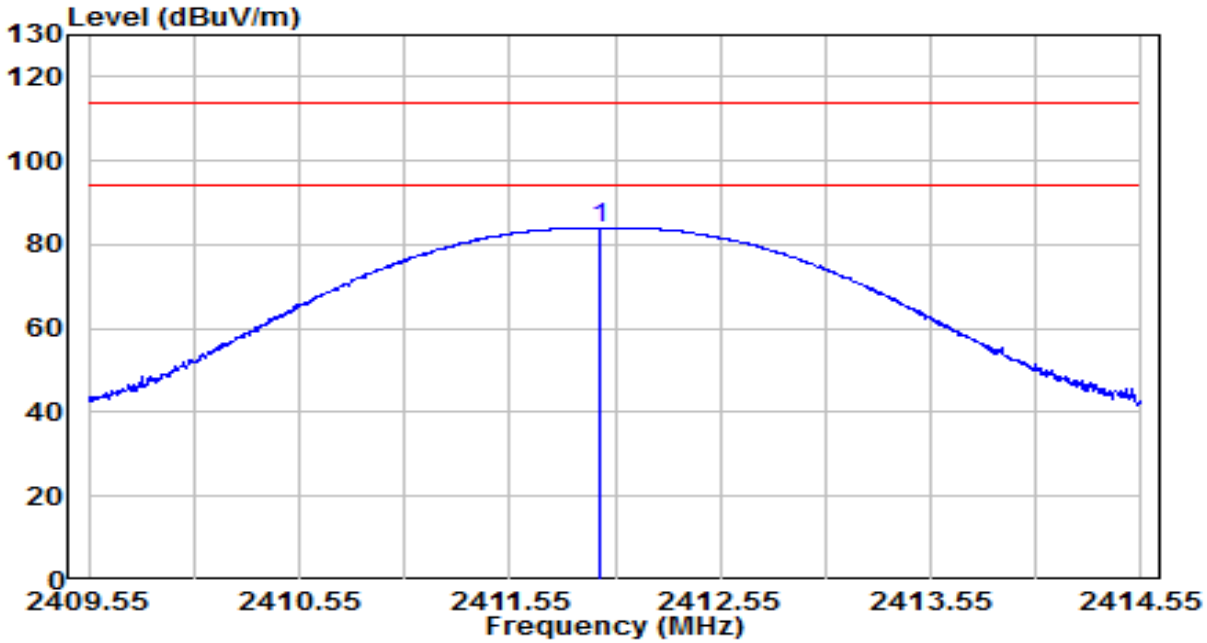


18GHz ~40GHz Test Setup:



7.4.5. Test Result

EUT	Wireless Receiver	Date of Test	2025-01-01
Factor	BBHA 9120D	Temp. / Humidity	23°C /67%
Polarity	Horizontal	Site / Test Engineer	AC1 / Todd
Test Mode	SRD 2.4G_TX_2412MHz	Test Voltage	AC 120V/60Hz

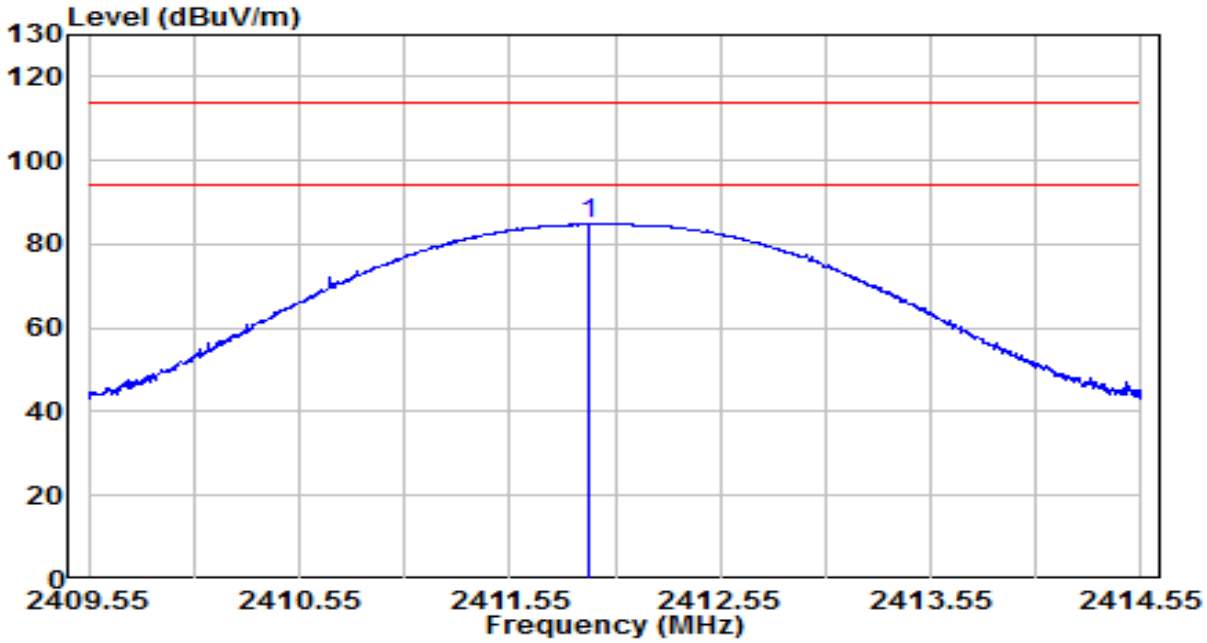


No		Frequency (MHz)	Reading (dBuV)	C.F (dB/m)	Measurement (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Height (cm)	Angle (deg)	Remark (QP/PK/AV)
1	*	2411.980	85.94	-1.96	83.99	-30.01	114.00	130	116	Peak

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	Wireless Receiver	Date of Test	2025-01-01
Factor	BBHA 9120D	Temp. / Humidity	23°C /67%
Polarity	Vertical	Site / Test Engineer	AC1 / Todd
Test Mode	SRD 2.4G_TX_2412MHz	Test Voltage	AC 120V/60Hz

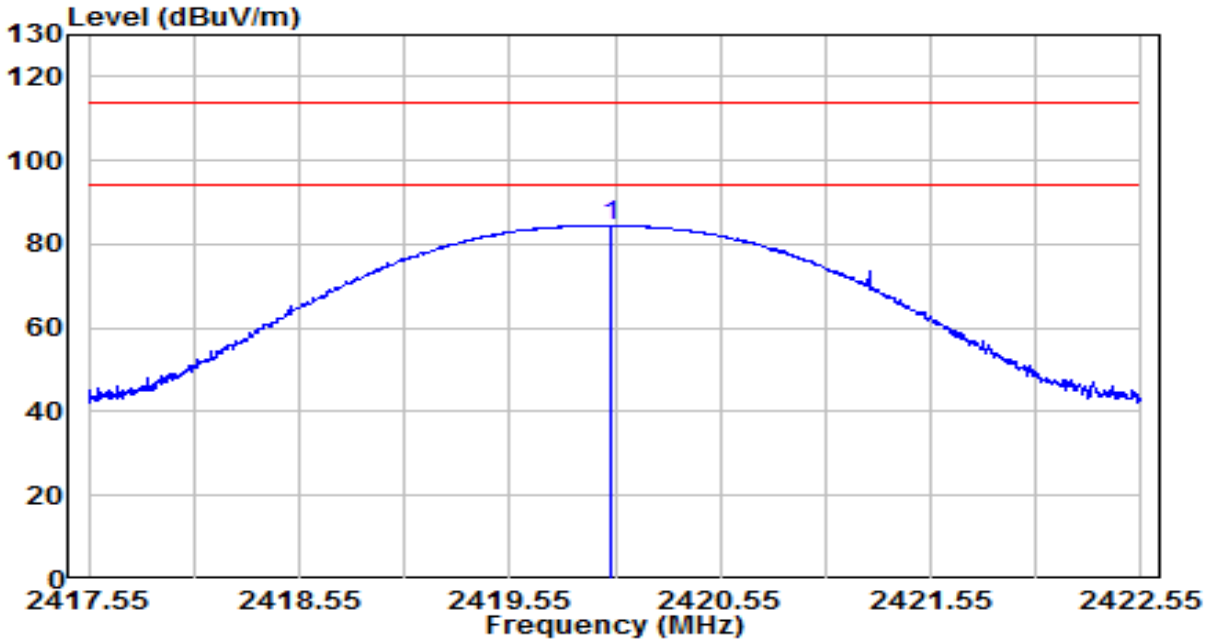


No		Frequency (MHz)	Reading (dBuV)	C.F (dB/m)	Measurement (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Height (cm)	Angle (deg)	Remark (QP/PK/AV)
1	*	2411.930	86.66	-1.96	84.70	-29.30	114.00	100	183	Peak

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	Wireless Receiver	Date of Test	2025-01-01
Factor	BBHA 9120D	Temp. / Humidity	23°C /67%
Polarity	Horizontal	Site / Test Engineer	AC1 / Todd
Test Mode	SRD 2.4G_TX_2424MHz	Test Voltage	AC 120V/60Hz

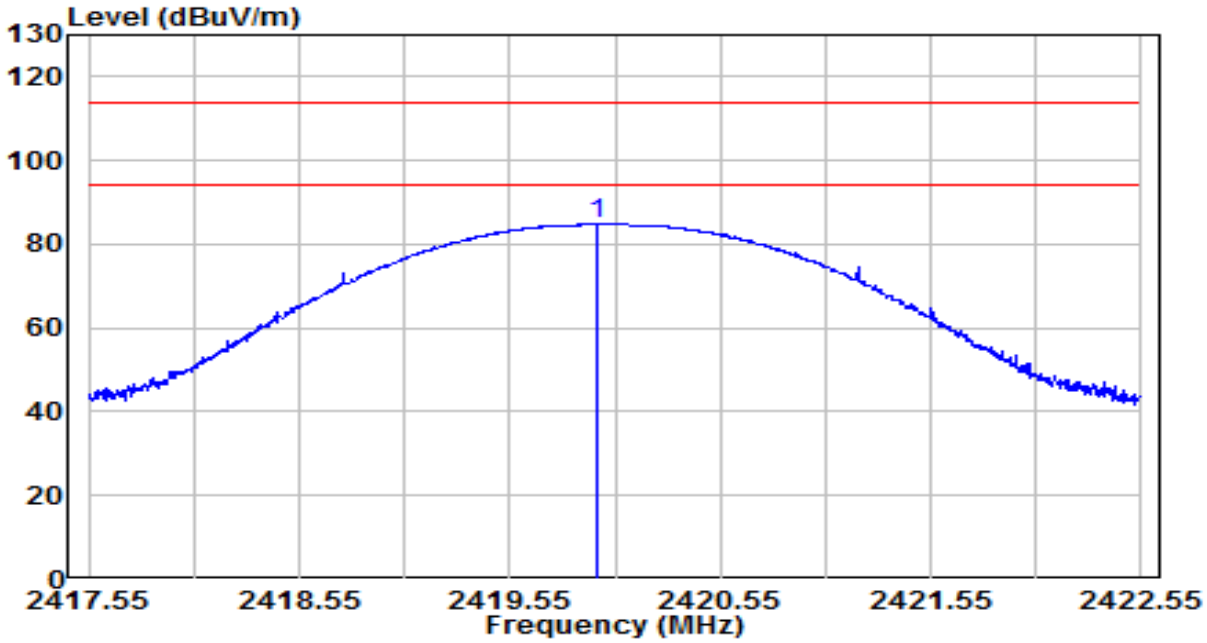


No		Frequency (MHz)	Reading (dBuV)	C.F (dB/m)	Measurement (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Height (cm)	Angle (deg)	Remark (QP/PK/AV)
1	*	2420.025	86.25	-1.93	84.32	-29.68	114.00	100	119	Peak

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	Wireless Receiver	Date of Test	2025-01-01
Factor	BBHA 9120D	Temp. / Humidity	23°C /67%
Polarity	Vertical	Site / Test Engineer	AC1 / Todd
Test Mode	SRD 2.4G_TX_2424MHz	Test Voltage	AC 120V/60Hz

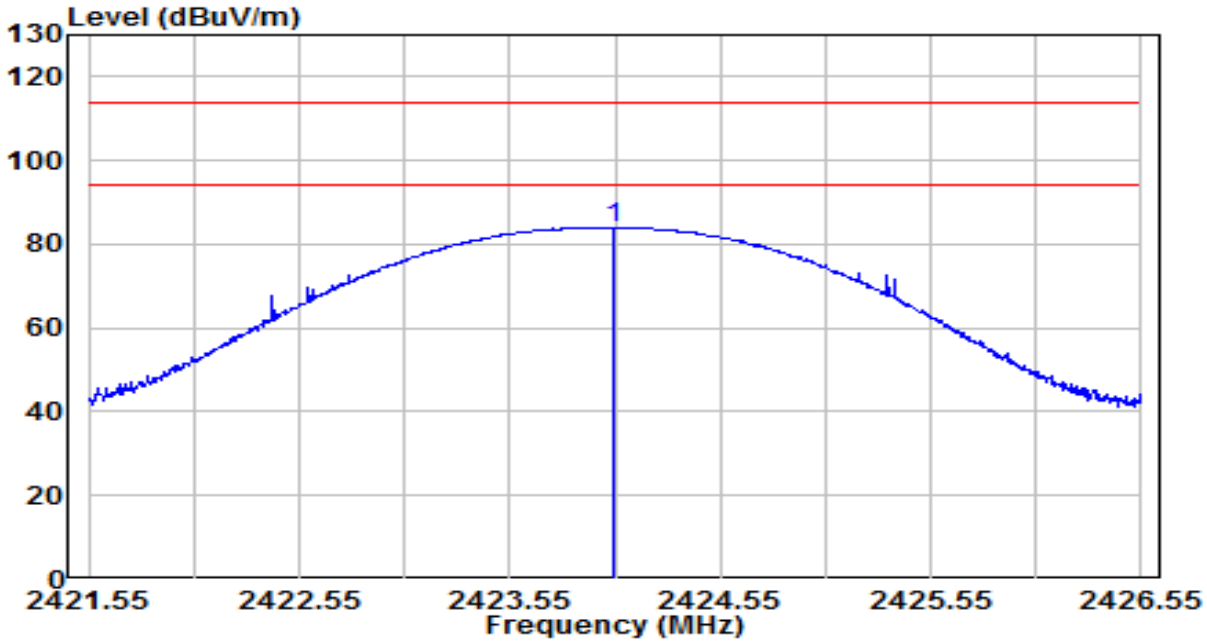


No		Frequency (MHz)	Reading (dBuV)	C.F (dB/m)	Measurement (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Height (cm)	Angle (deg)	Remark (QP/PK/AV)
1	*	2419.960	86.61	-1.93	84.67	-29.33	114.00	103	171	Peak

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	Wireless Receiver	Date of Test	2025-01-01
Factor	BBHA 9120D	Temp. / Humidity	23°C /67%
Polarity	Horizontal	Site / Test Engineer	AC1 / Todd
Test Mode	SRD 2.4G_TX_2424MHz	Test Voltage	AC 120V/60Hz

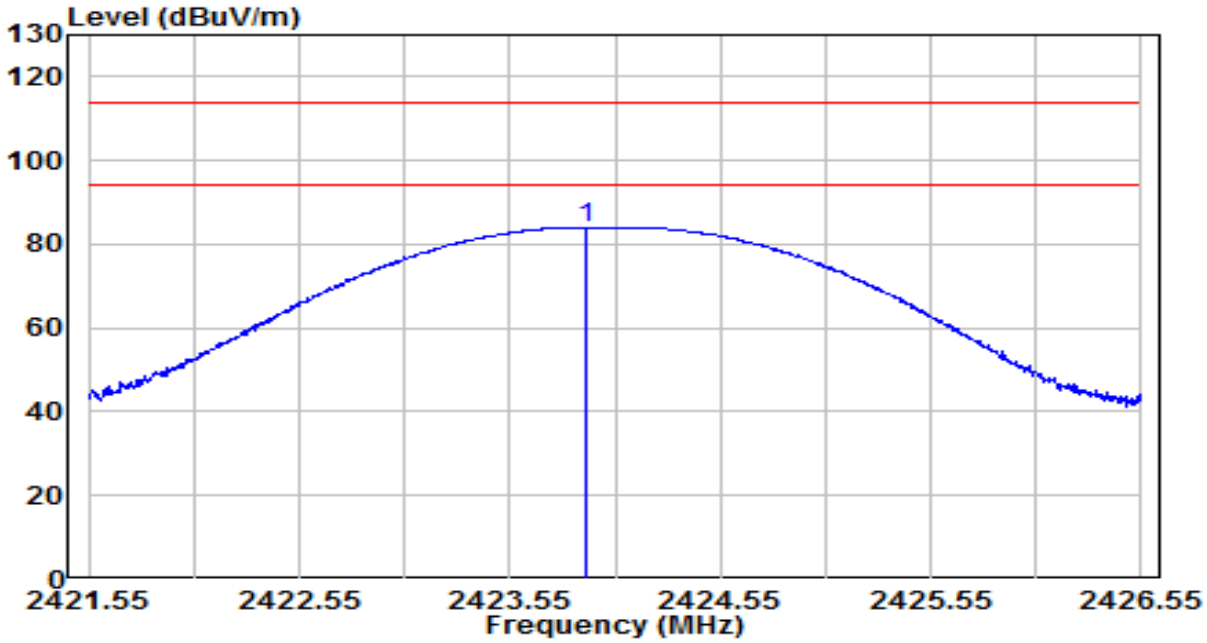


No		Frequency (MHz)	Reading (dBuV)	C.F (dB/m)	Measurement (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Height (cm)	Angle (deg)	Remark (QP/PK/AV)
1	*	2424.040	85.75	-1.92	83.83	-30.17	114.00	142	126	Peak

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	Wireless Receiver	Date of Test	2025-01-01
Factor	BBHA 9120D	Temp. / Humidity	23°C /67%
Polarity	Vertical	Site / Test Engineer	AC1 / Todd
Test Mode	SRD 2.4G_TX_2424MHz	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	*	2423.910	86.00	-1.92	84.08	-29.92	114.00	100	173	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.

7.5. AC Conducted Emissions Measurement

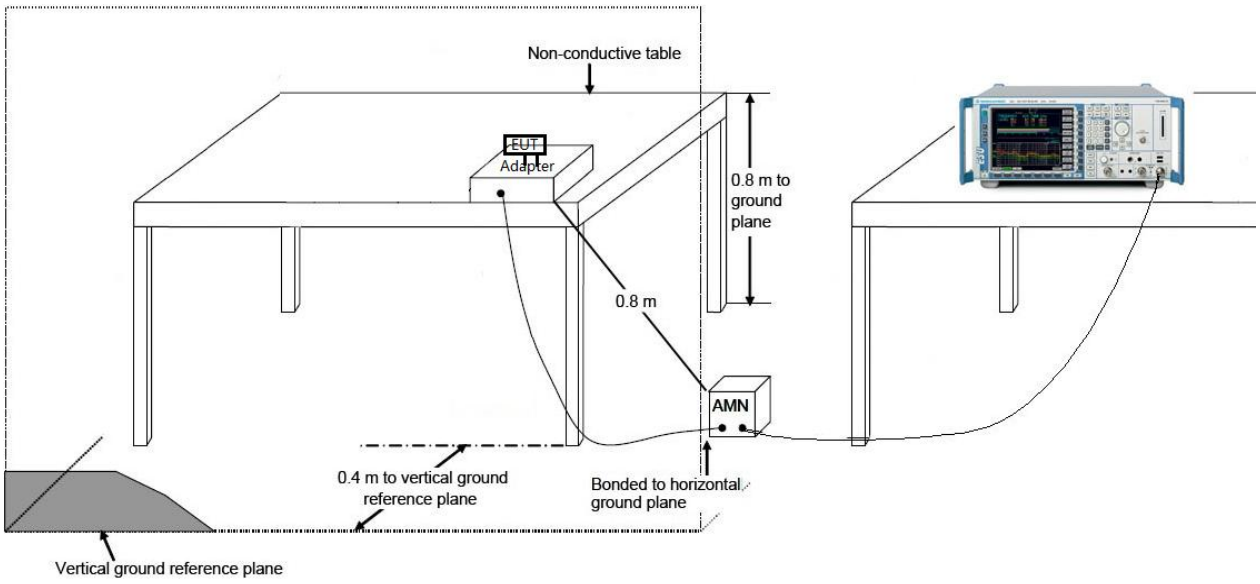
7.5.1. Test Limit

FCC Part 15 Subpart C Paragraph 15.207 Limits		
Frequency (MHz)	QP (dBμV)	Average (dBμV)
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.

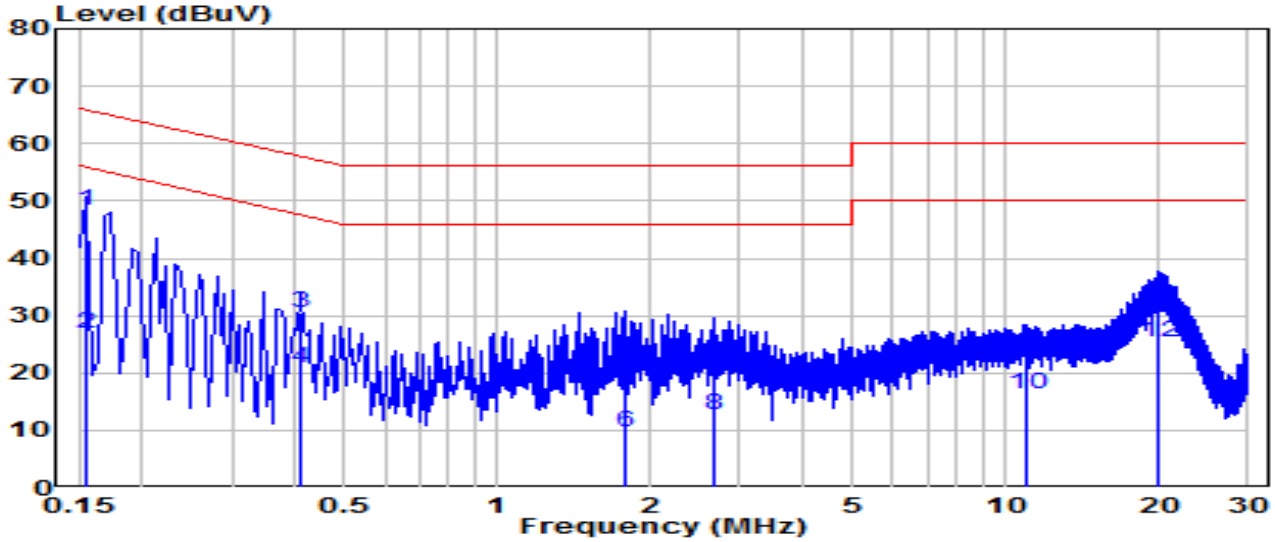
Note 2: The limit decreases linearly with the logarithm of the frequency in the range 0.15MHz to 0.5MHz.

7.5.2. Test Setup



7.5.3. Test Result

EUT	In-Ear Monitoring System	Date of Test	2024-10-24
Factor	CE_ENV216-L1 (Filter ON)	Temp. / Humidity	24.6°C /53%
Polarity	Line1	Site / Test Engineer	SR2 / Will
Test Mode	SRD 2.4G_TX_2424MHz	Test Voltage	AC 120V/60Hz



No		Frequency (MHz)	Reading (dBuV)	C.F (dB)	Measurement (dBuV)	Margin (dB)	Limit (dBuV)	Remark (QP/PK/AV)
1	*	0.154	38.76	9.63	48.40	-17.36	65.75	QP
2	*	0.154	17.32	9.63	26.95	-28.80	55.75	Average
3		0.411	20.93	9.65	30.57	-27.05	57.63	QP
4		0.411	11.08	9.65	20.73	-26.90	47.63	Average
5		1.792	9.47	9.70	19.17	-36.83	56.00	QP
6		1.792	0.07	9.70	9.76	-36.24	46.00	Average
7		2.674	11.17	9.71	20.88	-35.12	56.00	QP
8		2.674	2.99	9.71	12.70	-33.30	46.00	Average
9		11.012	12.33	9.88	22.20	-37.80	60.00	QP
10		11.012	6.42	9.88	16.30	-33.70	50.00	Average
11		19.854	21.68	9.94	31.62	-28.38	60.00	QP
12		19.854	15.49	9.94	25.43	-24.57	50.00	Average

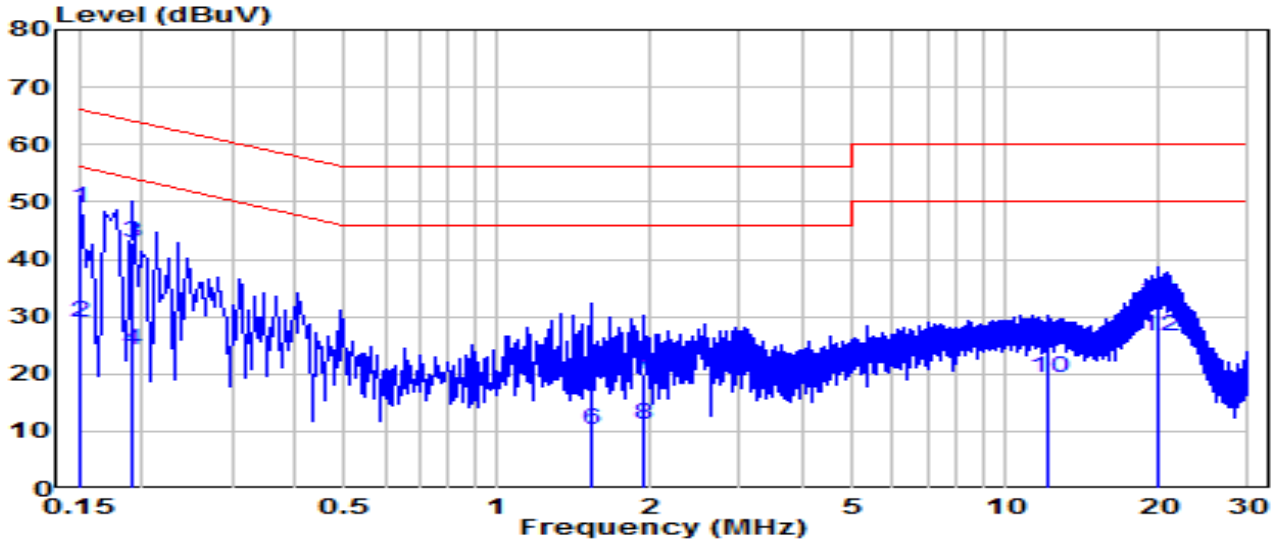
Note:

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	In-Ear Monitoring System	Date of Test	2024-10-24
Factor	CE_ENV216-N (Filter ON)	Temp. / Humidity	24.6°C /53%
Polarity	Neutral	Site / Test Engineer	SR2 / Will
Test Mode	SRD 2.4G_TX_2424MHz	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	39.18	9.63	48.81	-17.19	66.00	QP
2	*	0.150	19.23	9.63	28.86	-27.14	56.00	Average
3		0.190	33.16	9.63	42.79	-21.22	64.01	QP
4		0.190	14.41	9.63	24.04	-29.97	54.01	Average
5		1.540	9.33	9.70	19.03	-36.97	56.00	QP
6		1.540	0.71	9.70	10.41	-35.59	46.00	Average
7		1.950	10.09	9.71	19.80	-36.20	56.00	QP
8		1.950	1.60	9.71	11.31	-34.69	46.00	Average
9		12.123	14.87	9.91	24.78	-35.22	60.00	QP
10		12.123	9.51	9.91	19.42	-30.58	50.00	Average
11		19.989	22.53	10.00	32.53	-27.47	60.00	QP
12		19.989	16.51	10.00	26.51	-23.49	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 the item(s) tested and show that the **Wireless Receiver** is in compliance with Part 15C of the FCC Rules.

Appendix A : Test Photograph

Refer to “2407TWU102-UT” file.

Appendix B : External Photograph

Refer to “2407TWU102-UE” file.

Appendix C : Internal Photograph

Refer to “2407TWU102-UI” file.

The End