



MEASUREMENT REPORT

FCC ID : LZ6-ALPHA612XJ

APPLICANT : FOMOTECH INTERNATIONAL CORP.

Application Type : Certification

Product : Transmitter

Model No. : Alpha 612XJ

Trademark : FOMOTECH

FCC Classification : (DSS) FCC Part 15 Spread Spectrum Transmitter

FCC Rule Part(s) : Part 15.247

Test Procedure(s) : ANSI C63.10-2020+Cor 1-2023+C63.10a-2024 + Errata to C63.10a-2024

Received Date : May 15, 2025

Test Date : May 29, 2025~September 26, 2025

Tested By : Fran Chen
(Fran Chen)

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
2505TWO601-U2	1.0	Original Report	2025-08-13	

CONTENTS

Description	Page
1. INTRODUCTION	7
1.1. Scope	7
1.2. MRT Test Location	7
2. PRODUCT INFORMATION	8
2.1. Equipment Description	8
2.2. Product Specification Subjective to this Standard	8
2.3. Test Mode	8
2.4. Operation Frequency / Channel List	9
2.5. Test Configuration	10
2.6. Test System Details.....	11
2.7. Test Software	11
2.8. Duty cycle.....	11
2.9. EMI Suppression Device(s)/Modifications.....	11
2.10. Labeling Requirements.....	12
3. DESCRIPTION of TEST	13
3.1. Evaluation Procedure	13
3.2. AC Line Conducted Emissions	13
3.3. Radiated Emissions.....	14
4. ANTENNA REQUIREMENTS.....	15
5. TEST EQUIPMENT CALIBRATION DATE.....	16
6. MEASUREMENT UNCERTAINTY.....	17
7. TEST RESULT	18
7.1. Summary.....	18
7.2. 20dB Bandwidth Measurement.....	19
7.2.1. Test Limit	19
7.2.2. Test Procedure used.....	19
7.2.3. Test Setting.....	19
7.2.4. Test Setup	19
7.2.5. Test Result.....	20
7.3. Output Power Measurement.....	22
7.3.1. Test Limit	22
7.3.2. Test Procedure Used	22

7.3.3.	Test Setting.....	23
7.3.4.	Test Setup	23
7.3.5.	Test Result.....	24
7.4.	Carrier Frequency Separation Measurement.....	25
7.4.1.	Test Limit	25
7.4.2.	Test Procedure Used	25
7.4.3.	Test Setting.....	25
7.4.4.	Test Setup	25
7.4.5.	Test Result.....	26
7.5.	Number of Hopping Channels Measurement.....	28
7.5.1.	Test Limit	28
7.5.2.	Test Procedure Used	28
7.5.3.	Test Setting.....	28
7.5.4.	Test Setup	28
7.5.5.	Test Result.....	29
7.6.	Time of Occupancy Measurement	30
7.6.1.	Test Limit	30
7.6.2.	Test Procedure Used	30
7.6.3.	Test Setting.....	30
7.6.4.	Test Setup	30
7.6.5.	Test Result.....	31
7.7.	Out-of-Band Spurious Emissions Emissions Measurement	33
7.7.1.	Test Limit	33
7.7.2.	Test Procedure Used	33
7.7.3.	Test Setting.....	34
7.7.4.	Test Setup	34
7.7.5.	Test Result.....	35
7.8.	Radiated Spurious Emission Measurement	37
7.8.1.	Test Limit	37
7.8.2.	Test Procedure Used	37
7.8.3.	Test Setting.....	37
7.8.4.	Test Setup	39
7.8.5.	Test Result.....	41
7.9.	Radiated Restricted Band Edge Measurement	53
7.9.1.	Test Limit	53
7.9.2.	Test Procedure Used	53
7.9.3.	Test Setting.....	53
7.9.4.	Test Setup	55

7.9.5. Test Result.....	56
7.10. AC Conducted Emissions Measurement	60
7.10.1. Test Limit	60
7.10.2. Test Setup	60
7.10.3. Test Result.....	61
8. CONCLUSION	63
Appendix A : Test Photograph.....	64
Appendix B : External Photograph.....	64
Appendix C : Internal Photograph.....	64

General Information

Applicant	FOMOTECH INTERNATIONAL CORP.
Applicant Address	2F-1, 286-3, HSIN-YA ROAD, CHIEN CHEN DISTRICT, KAOHSIUNG, TAIWAN
Manufacturer	Fomotech International Corp.
Manufacturer Address	2F-1, 286-3, Hsin Ya Road, Chien Chen District Kaohsiung
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
MRT IC Registration No.	21723
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.

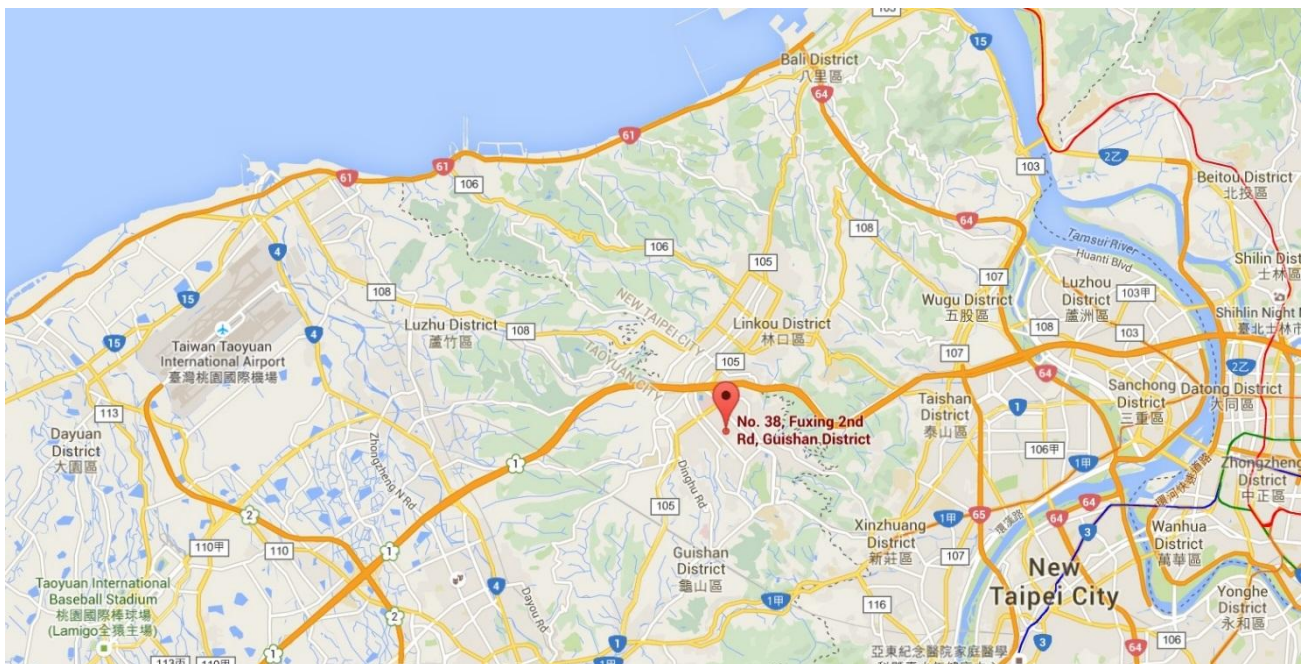
1. INTRODUCTION

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	Transmitter
Model No.	Alpha 612XJ
Test Sample Number	#1
Supports Radios Spec.	Sub-1G

2.2. Product Specification Subjective to this Standard

Operating Frequency	902~928MHz
Type of modulation	FHSS (GFSK)

2.3. Test Mode

Test Mode	Mode 1: Transmit – GFSK
-----------	-------------------------

Note:

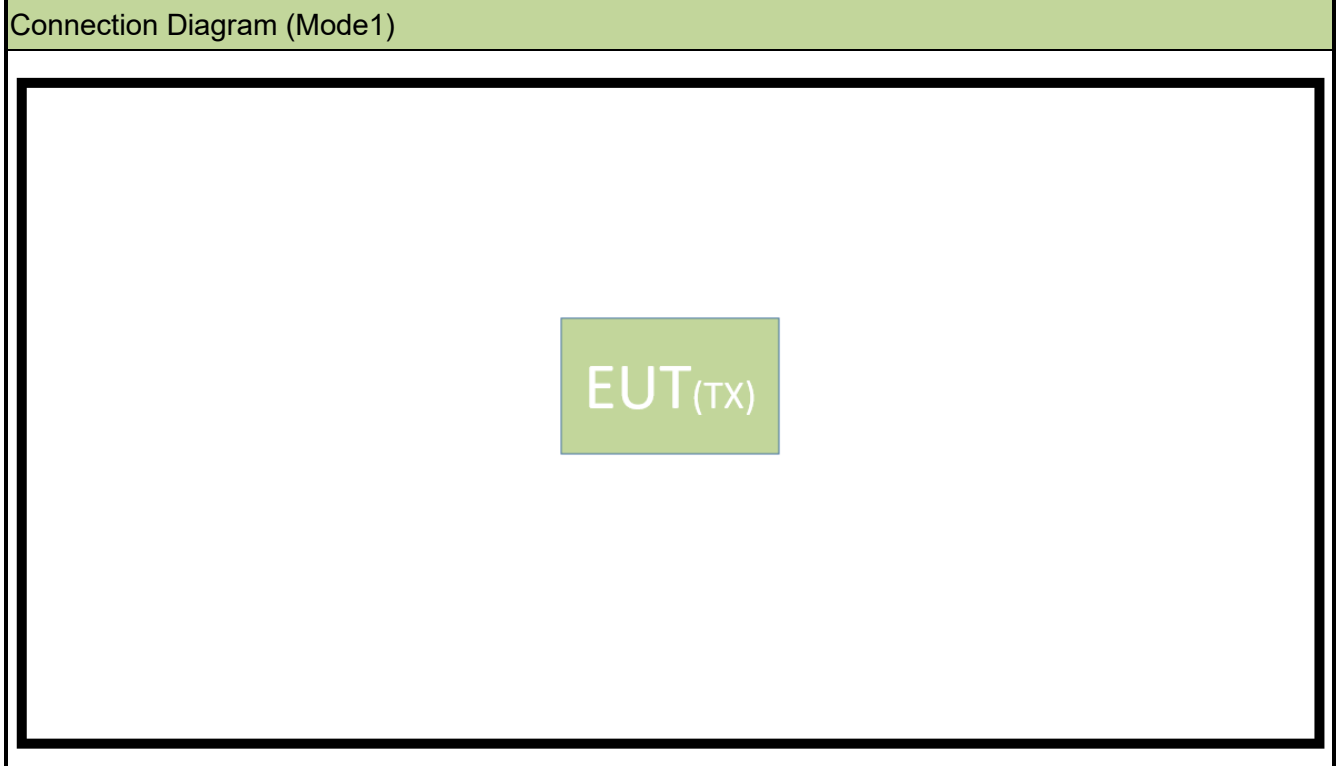
1. Regarding to the operation frequency, the lowest, middle and highest frequency are selected to perform the test.

2.4. Operation Frequency / Channel List

Channel	Frequency (MHz)	Channel	Frequency (MHz)
1	903.0	26	915.5
2	903.5	27	916.0
3	904.0	28	916.5
4	904.5	29	917.0
5	905.0	30	917.5
6	905.5	31	918.0
7	906.0	32	918.5
8	906.5	33	919.0
9	907.0	34	919.5
10	907.5	35	920.0
11	908.0	36	920.5
12	908.5	37	921.0
13	909.0	38	921.5
14	909.5	39	922.0
15	910.0	40	922.5
16	910.5	41	923.0
17	911.0	42	923.5
18	911.5	43	924.0
19	912.0	44	924.5
20	912.5	45	925.0
21	913.0	46	925.5
22	913.5	47	926.0
23	914.0	48	926.5
24	914.5	49	927.0
25	915.0	50	927.5

2.5. Test Configuration

This device was tested per the guidance of ANSI C63.10-2020. ANSI C63.10-2020 was used to reference the appropriate EUT setup for radiated spurious emissions testing and AC line conducted testing.



2.6. Test System Details

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

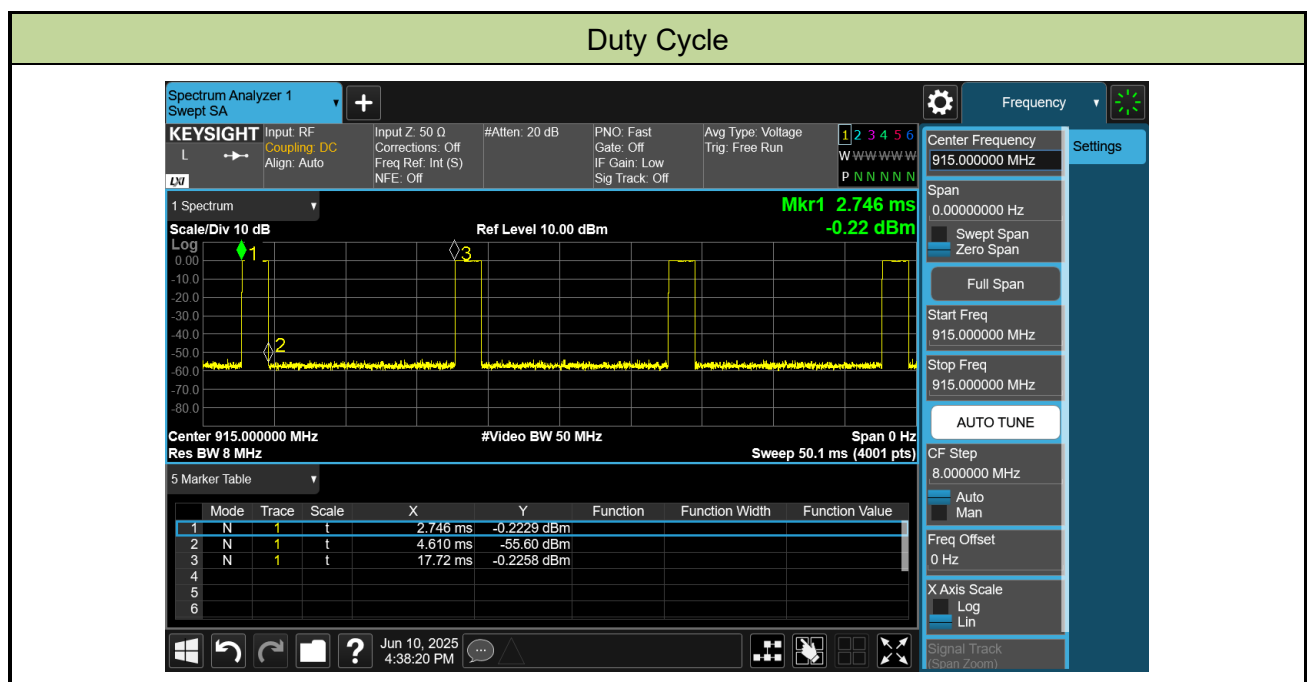
Mode1: N/A

2.7. Test Software

The test utility software used during testing was “AlphaTools_W64_V4.5.2”.

2.8. Duty cycle

Test Mode	Duty Cycle
Sub-1G	12.45%



Note: Duty Cycle Factor = $20 \cdot \log(1/\text{Duty Cycle}) = 18.10(\text{dB})$

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 C63.10-2020) were used in the measurement of the **Transmitter**.

Deviation from measurement procedure.....None

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 whichever 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 were 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 C63.10-2020.

Line conducted emissions test results are shown in Section 7.10.

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. An 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, whichever produced the worst-case emissions. According to 3dB Beamwidth of horn antenna, the horn antenna should be always directed to the EUT when rising height.

Radiated emissions test results are shown in Section 7.8 & 7.9

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 Transmitter, 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	FOMOTECH	A6XX_ETA	PCB	0dBi

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	MRTTWA00019	1 year	2026/3/5
Two-Line V-Network	R&S	ENV216	MRTTWA00020	1 year	2026/4/14
EMI Test Receiver	R&S	ESR3	MRTTWA00045	1 year	2026/5/13

Radiated Emissions

Instrument	Manufacturer	Type No.	Asset No.	Cali. Interval	Cali. Due Date
Active Loop Antenna	SCHWARZBECK	FMZB 1519B	MRTTWA00002	1 year	2026/4/16
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	2026/3/27
Broadband Amplifier	SCHWARZBECK	BBV 9721	MRTTWA00006	1 year	2026/3/20
EMI Test Receiver	R&S	ESR3	MRTTWA00009	1 year	2026/3/4
Signal Analyzer	R&S	FSV40	MRTTWA00007	1 year	2026/5/20

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	MRTTWA00014	1 year	2026/4/15
USB Wideband Power Sensor	KEYSIGHT	U2021XA	MRTTWA00015	1 year	2026/3/11

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

7. TEST RESULT

7.1. Summary

Product Name: Transmitter

FCC Part Section(s)	Test Description	Test Limit	Test Condition	Test Result	Reference
15.247(a)(1)	20dB Bandwidth	N/A	Conducted	PASS	Section 7.2
15.247(b)(1)	Output Power	<1 Watt if > 75 non-overlapping channels used		PASS	Section 7.3
15.247(a)(1)	Carrier Frequency Separation	25KHz or 20 dB BW for systems with Output Power < 125mW		PASS	Section 7.4
15.247(a)(1)(iii)	Number of Hopping Channels	> 15 Channels		PASS	Section 7.5
15.247(a)(1)(iii)	Time of Occupancy	< 0.4 sec in 31.6 sec period		PASS	Section 7.6
15.247(d)	Out-of-Band Emissions	Conducted $\geq$ 20dBc		PASS	Section 7.7
15.205 15.209	Spurious Emission	< FCC 15.209 limits	Radiated	PASS	Section 7.8
15.205 15.209	Band Edge Measurement	$\leq$ 74dBuV/m(Peak) $\leq$ 54dBuV/m(Average)		PASS	Section 7.9
15.207	AC Conducted Emissions 150kHz - 30MHz	< FCC 15.207 limits	Line Conducted	Pass	Section 7.10

Note:

- 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. 20dB Bandwidth Measurement

7.2.1. Test Limit

N/A

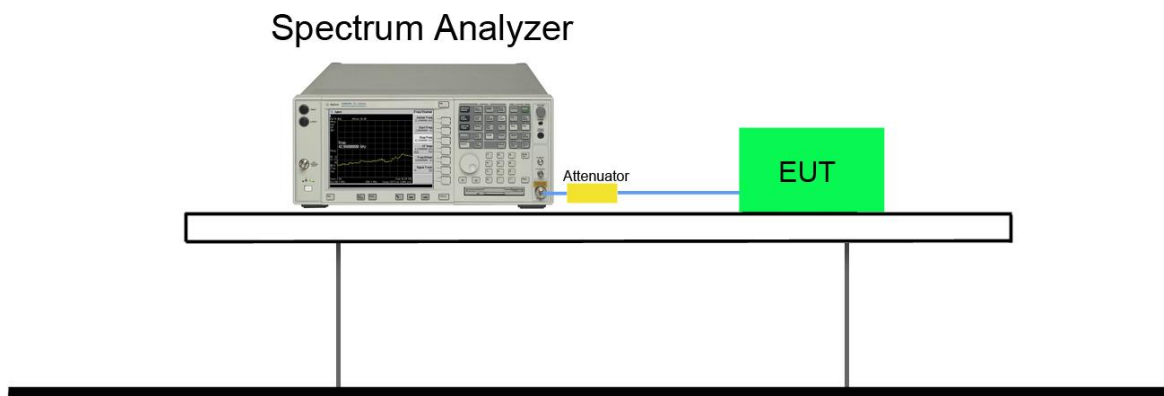
7.2.2. Test Procedure used

ANSI C63.10-2020 - Section 6.9.2

7.2.3. Test Setting

1. Set RBW $\geq 1\%$ of the 20dB bandwidth
2. VBW $\geq 3 \times$ RBW
3. Span = approximately 2 to 5 times the 20dB bandwidth, centered on a hopping channel
4. Detector = Peak
5. Trace mode = max hold
6. Sweep = auto couple
7. Allow the trace to stabilize
8. Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 20 dB relative to the maximum level measured in the fundamental emission.

7.2.4. Test Setup

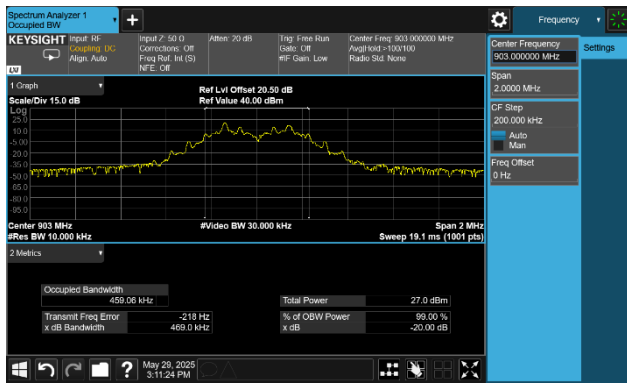


7.2.5. Test Result

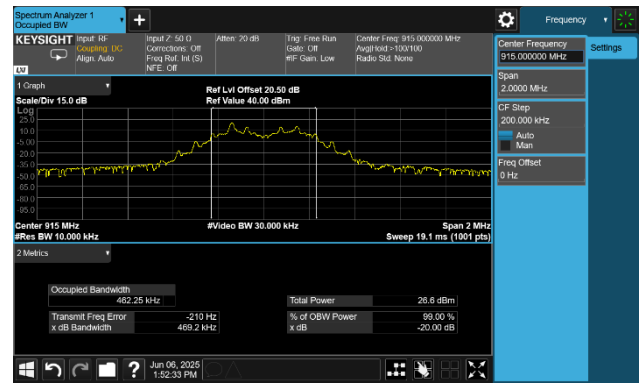
Product	Transmitter	Temperature	24°C
Test Engineer	Fran	Relative Humidity	56%
Test Site	SR7	Test Date	2025/5/29~2025/6/6

Test Mode	Channel No.	Frequency (MHz)	20dB Bandwidth (kHz)	Result
Sub-1G	1	903	469.00	Pass
	25	915	469.20	Pass
	50	927.5	467.60	Pass

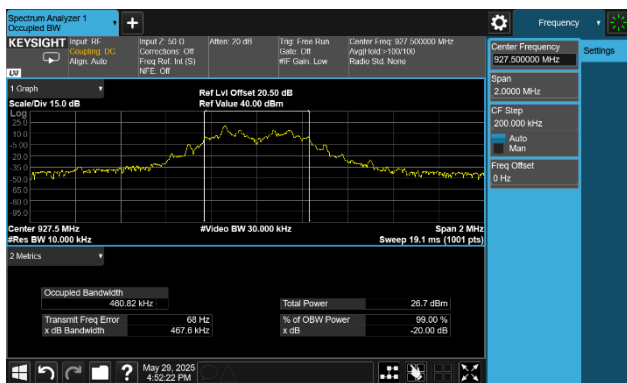
CH01 (903MHz)



CH25 (915MHz)



CH50 (927.5MHz)



7.3. Output Power Measurement

7.3.1. Test Limit

The maximum out power permissible output power is 1 Watt (30dBm)

The E.I.R.P Power is 4 Watt (36dBm)

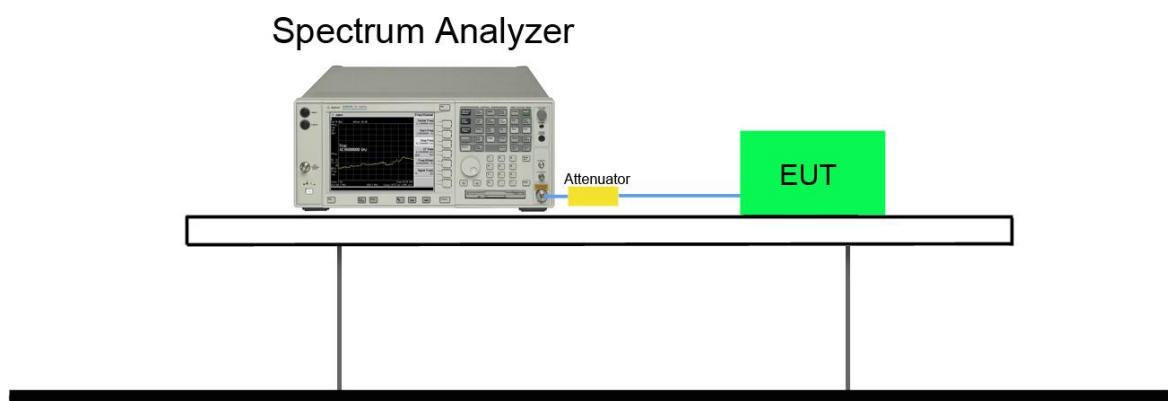
7.3.2. Test Procedure Used

ANSI C63.10-2020 - Section 7.8.5

7.3.3. Test Setting

1. Set RBW $\geq$ the 20 dB bandwidth of the emission being measured.
2. VBW $\geq 3 \times$ RBW
3. Span = approximately 2 to 3 times the 20dB bandwidth, centered on a hopping channel
4. Detector = Peak
5. Trace mode = max hold
6. Sweep = auto couple
7. Allow the trace to stabilize, Use the marker-to-peak function to set the marker to the peak of the emission. The indicated level is the peak output power (don't forget added the external attenuation and cable loss)
8. Note: A peak responding power meter may be used, where the power meter and sensor system video bandwidth is greater than the occupied bandwidth of the unlicensed wireless device, rather than a spectrum analyzer.

7.3.4. Test Setup



7.3.5. Test Result

Product	Transmitter	Temperature	24°C
Test Engineer	Fran	Relative Humidity	56%
Test Site	SR7	Test Date	2025/5/29~2025/6/6

Test Mode	Channel No.	Frequency (MHz)	Peak Power (dBm)	EIRP (dBm)	Peak Power Limit (dBm)	EIRP Limit (dBm)
Sub-1G	1	903	20.26	20.26	< 30	< 36
	25	915	20.26	20.26	< 30	< 36
	50	927.5	20.24	20.24	< 30	< 36

Note:

1. Peak Power Output Value = Reading value on power meter (dBm) + cable loss (dBm)
2. E.I.R.P Power = Peak Power (dBm) + Antenna Gain (dBi)
3. Antenna Gain = 0.00dBi

7.4. Carrier Frequency Separation Measurement

7.4.1. Test Limit

The minimum permissible channel separation for this system is the value of the 20dB BW.

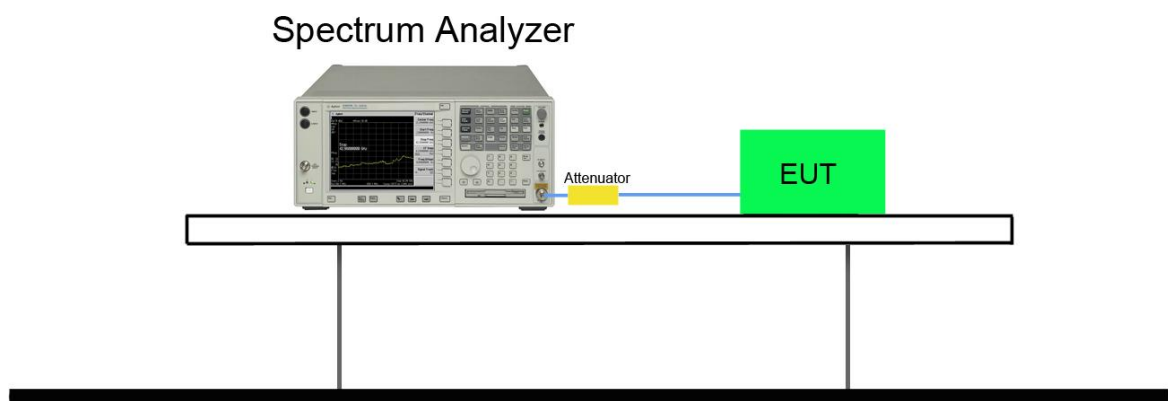
7.4.2. Test Procedure Used

ANSI C63.10-2020 - Section 7.8.2

7.4.3. Test Setting

1. Span = wide enough to capture the peaks of two adjacent channels.
2. RBW $\geq 1\%$ of the span
3. VBW $\geq$ RBW
4. Detector = peak
5. Sweep time = auto couple
6. Trace mode = max hold
7. Trace was allowed to stabilize

7.4.4. Test Setup



7.4.5. Test Result

Product	Transmitter	Temperature	24°C
Test Engineer	Fran	Relative Humidity	56%
Test Site	SR7	Test Date	2025/6/6

Test Mode	Channel No.	Frequency (MHz)	Channel Separation (kHz)	Limit of 20dB Bandwidth (kHz)	Result
Sub-1G	1	903	500	469.0	Pass
	25	915	500	469.2	Pass
	50	927.5	500	467.6	Pass

Note:

1. The limit is 25 kHz or the value of the 20dB bandwidth of the hopping channel, whichever is greater.
2. The 20dB Bandwidth is refer to section 7.2.

CH01 (903MHz)



CH25 (915MHz)



CH50 (927.5MHz)



7.5. Number of Hopping Channels Measurement

7.5.1. Test Limit

This frequency hopping system must employ a minimum of 15 hopping channels.

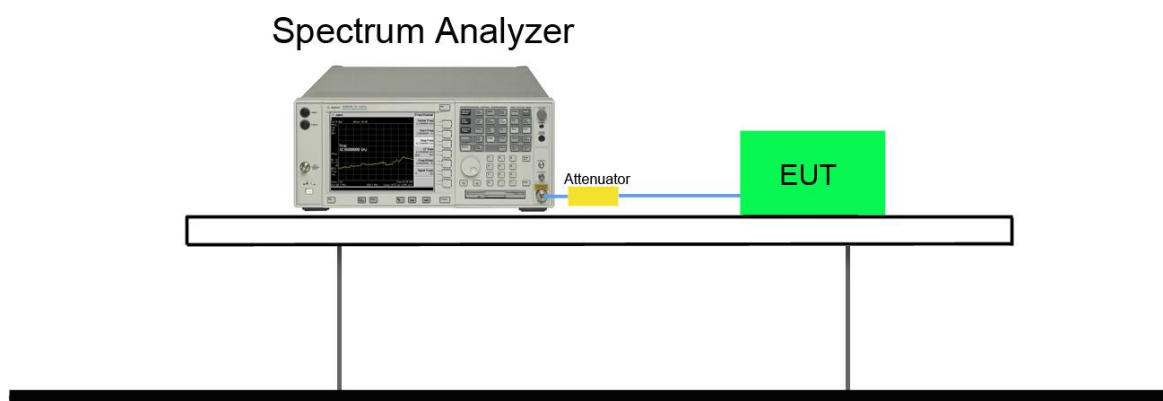
7.5.2. Test Procedure Used

ANSI C63.10-2020 - Section 7.8.3

7.5.3. Test Settling

1. Span = the frequency band of operation.
2. RBW $\geq$ 1 % of the span
3. VBW $\geq$ RBW
4. Detector = Peak
5. Trace mode = max hold
6. Sweep time = auto couple
7. The trace was allowed to stabilize

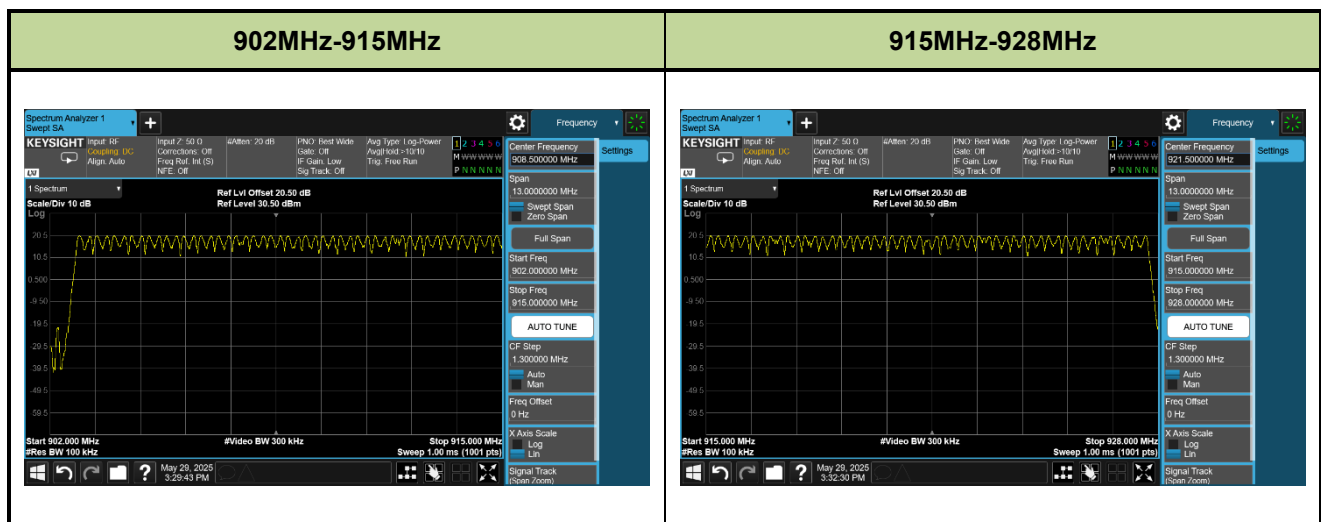
7.5.4. Test Setup



7.5.5. Test Result

Product	Transmitter	Temperature	24°C
Test Engineer	Fran	Relative Humidity	56%
Test Site	SR7	Test Date	2025/5/29

Test Mode (Hopping)	Channel Numbers	Frequency (MHz)	Limit (Hopping Channels)	Result
Sub-1G	50	903~927.5	≥ 25	Pass



7.6. Time of Occupancy Measurement

7.6.1. Test Limit

The maximum permissible time of occupancy is 400ms within a period of 400ms multiplied by the number of hopping channels employed.

7.6.2. Test Procedure Used

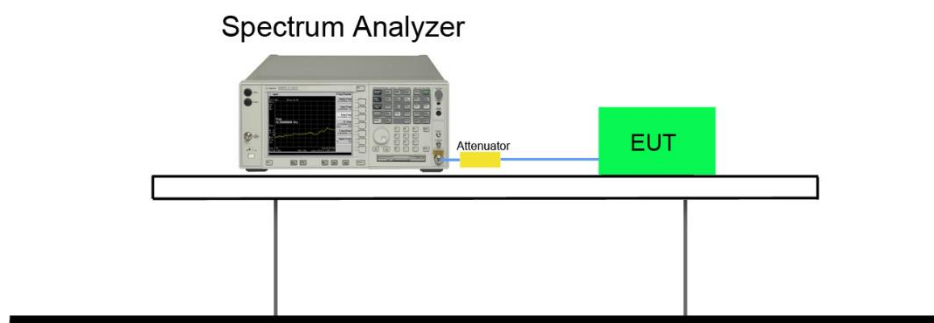
ANSI C63.10-2020 - Section 7.8.4

7.6.3. Test Settling

1. Span = zero span, centered on a hopping channel.
2. RBW = 1MHz
3. VBW $\geq$ RBW
4. Sweep time = as necessary to capture the entire dwell time per hopping channel
5. Detector = Peak
6. Trace mode = max hold

If possible, use the marker-delta function to determine the dwell time. If this value varies with different modes of operation (data rate, modulation format, etc.), repeat this test for each variation. An oscilloscope may be used instead of a spectrum analyzer. The EUT shall show compliance with the appropriate regulatory limit for the number of hopping channels. A plot of the data shall be included in the test report.

7.6.4. Test Setup



7.6.5. Test Result

Product	Transmitter	Temperature	24°C
Test Engineer	Fran	Relative Humidity	56%
Test Site	SR7	Test Date	2025/6/6

Test Mode	Frequency (MHz)	Time of Occupancy (ms)	Hopping of Numbers	Sweep time (ms)	Duty cycle	Dwell Time (Sec)	Limit (Sec)	Result
Sub-1G	903	1.86	13	10000	0.002	0.012	0.4	Pass
	915	1.85	13	10000	0.002	0.012	0.4	Pass
	927.5	1.86	13	10000	0.002	0.012	0.4	Pass

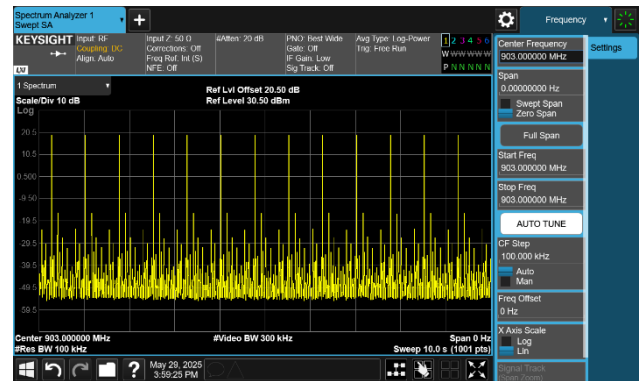
Note:

- Duty cycle = ((Time slot length (ms)*Hopping of Number) / Sweep time (ms)) °
- Dwell time = ((Duty cycle *(Time Period <0.4*50>)) / (Total Hopping of Number<50>)) °

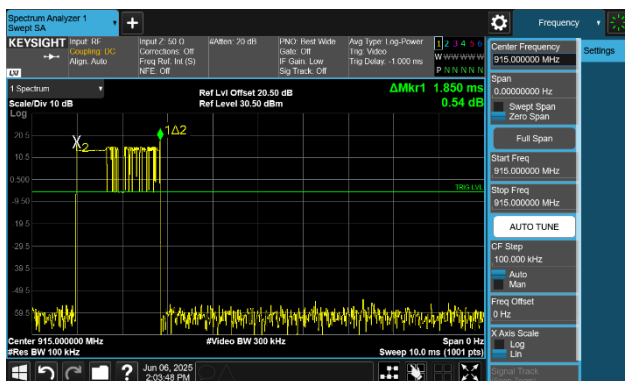
CH01 (903MHz)- Duty Cycle



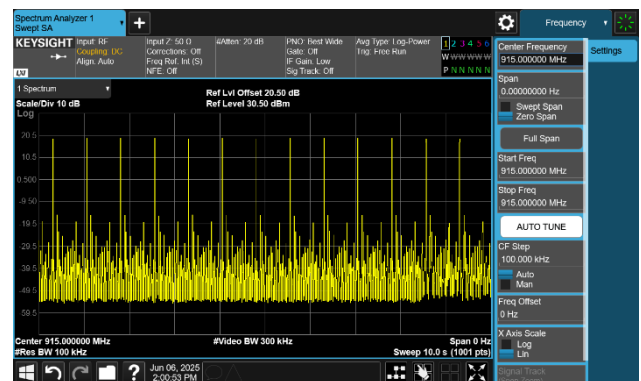
CH01 (903MHz)- Dwell time



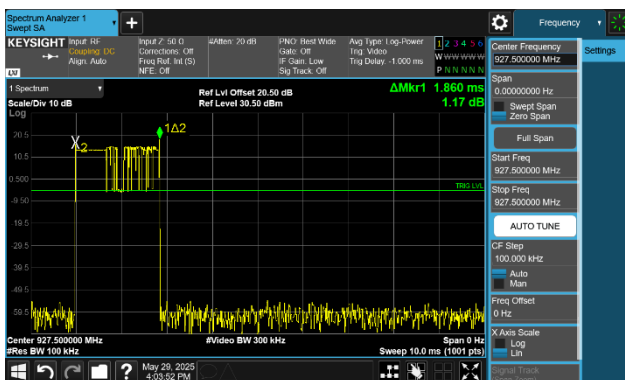
CH25 (915MHz)- Duty Cycle



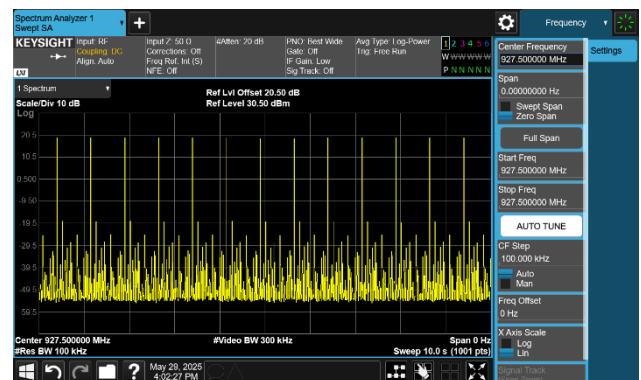
CH25 (915MHz)- Dwell time



CH50 (927.5MHz)- Duty Cycle



CH50 (927.5MHz)- Dwell time



7.7. Out-of-Band Spurious Emissions Emissions Measurement

7.7.1. 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 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, provided the transmitter demonstrates compliance with the peak conducted or a radiated 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.

7.7.2. Test Procedure Used

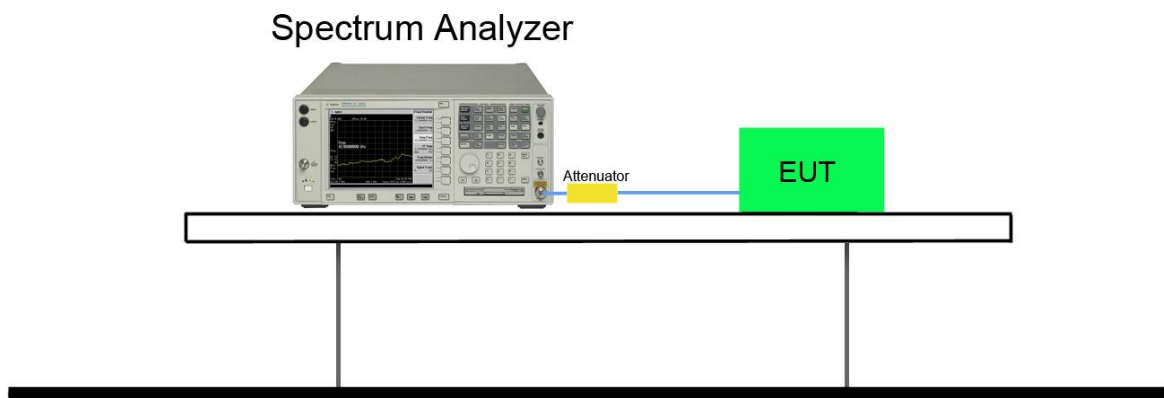
ANSI C63.10-2020 - Section 7.8.8

7.7.3. Test Setting

1. Span = wide enough to capture the peak level of the in-band emission and all spurious emissions (e.g., harmonics) from the lowest frequency generated in the EUT up through the 10th harmonic. Typically, several plots are required to cover this entire span.
2. RBW = 100 KHz
3. VBW $\geq$ RBW
4. Detector = peak
5. Sweep time = auto couple
6. Trace mode = max hold
7. Trace was allowed to stabilize

Set the marker on the peak of any spurious emission recorded. The level displayed must comply with the limit specified in this section.

7.7.4. Test Setup

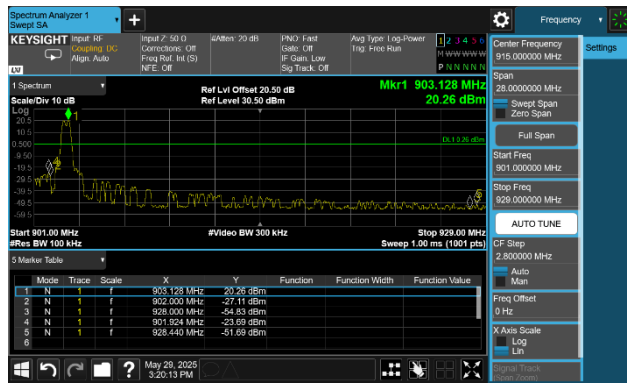


7.7.5. Test Result

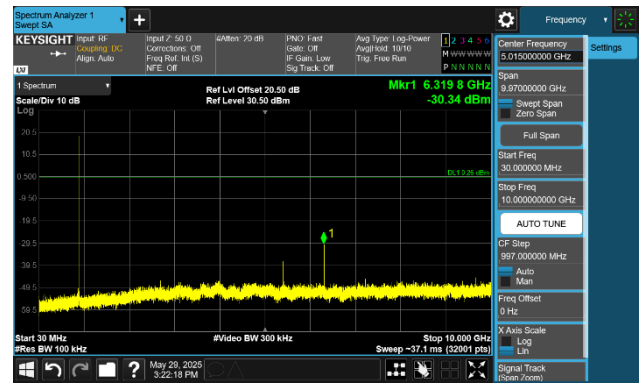
Product	Transmitter	Temperature	24°C
Test Engineer	Fran	Relative Humidity	56%
Test Site	SR7	Test Date	2025/5/29~2025/6/6

Test Mode	Channel No.	Frequency (MHz)	Limit (MHz)	Result
Sub-1G	1	903	20dBc	Pass
	25	915	20dBc	Pass
	50	927.5	20dBc	Pass

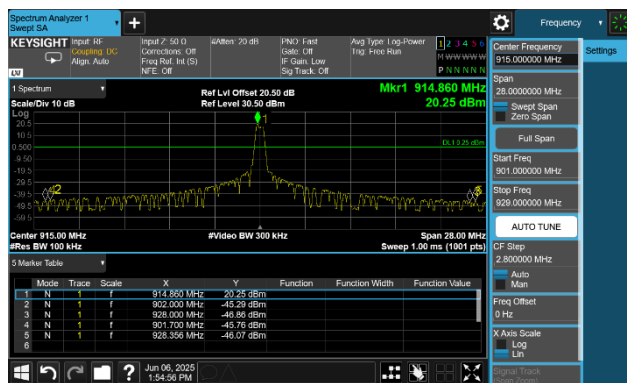
CH01 (903MHz)



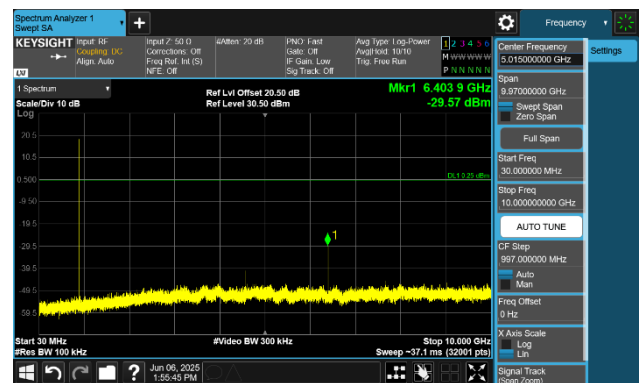
CH01 (903MHz)



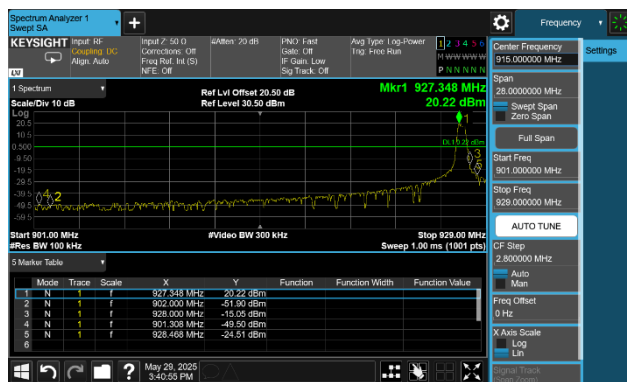
CH25 (915MHz)



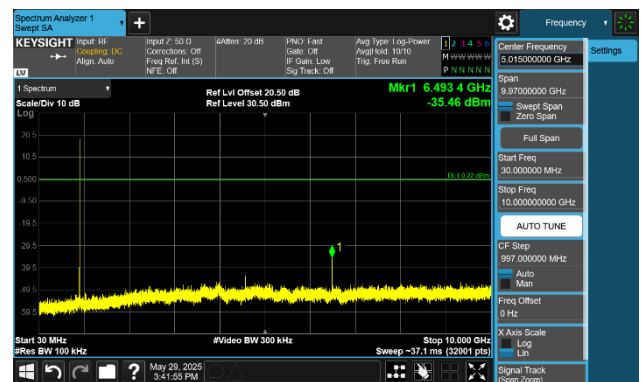
CH25 (915MHz)



CH50 (927.5MHz)



CH50 (927.5MHz)



7.8. Radiated Spurious Emission Measurement

7.8.1. 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

7.8.2. Test Procedure Used

ANSI C63.10-2020 - Section 11.12.1

7.8.3. 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

- Trace was allowed to stabilize

Table 1 - RBW as a function of frequency

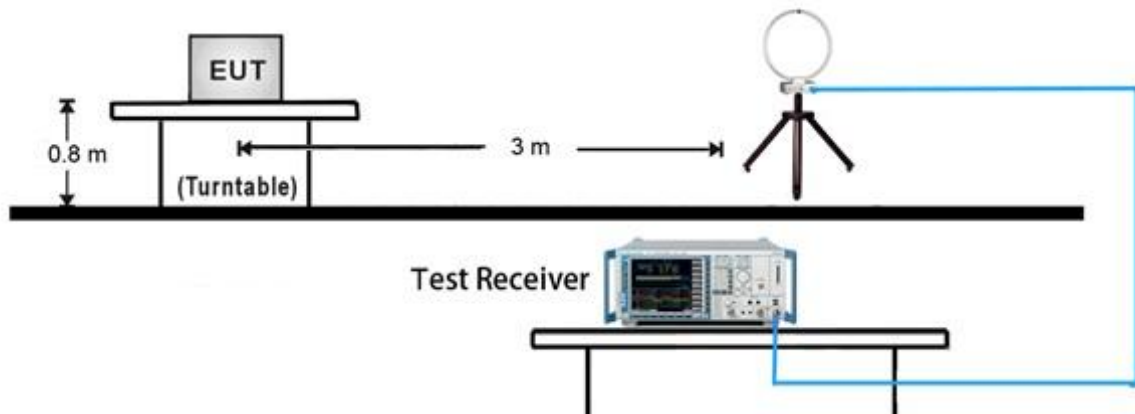
Frequency	RBW
9 ~ 150 kHz	200 ~ 300 Hz
0.15 ~ 30 MHz	9 ~ 10 kHz
30 ~ 1000 MHz	100 ~ 120 kHz
> 1000 MHz	1 MHz

Average Field Strength Measurements

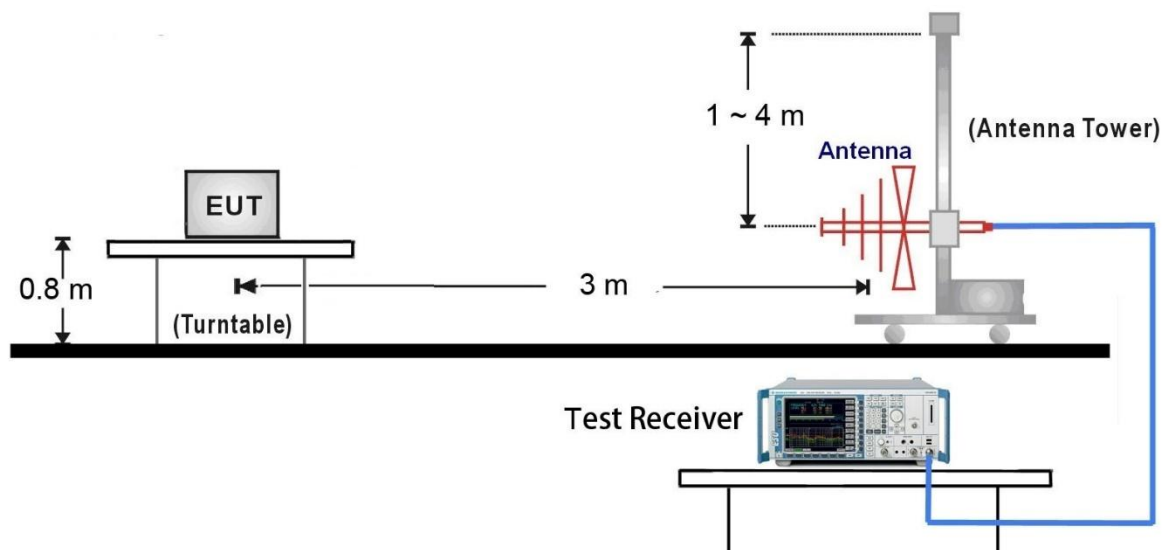
- Analyzer center frequency was set to the frequency of the radiated spurious emission of interest
- RBW = 1MHz
- $VBW \geq 1/T$
- De As an alternative, the instrument may be set to linear detector mode. Ensure that video filtering is applied in linear voltage domain (rather than in a log or dB domain).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

7.8.4. Test Setup

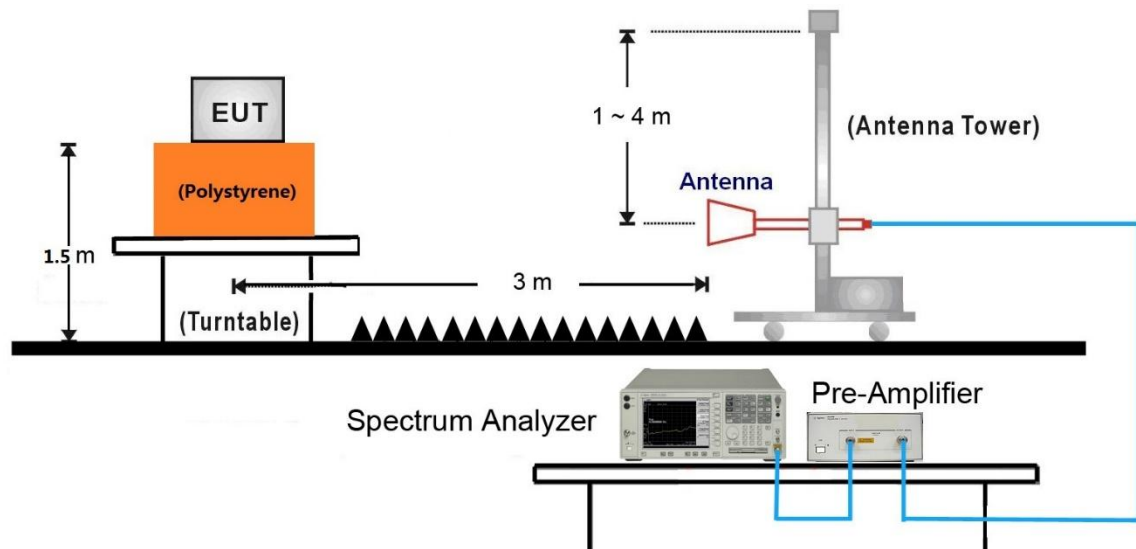
9kHz ~ 30MHz Test Setup:



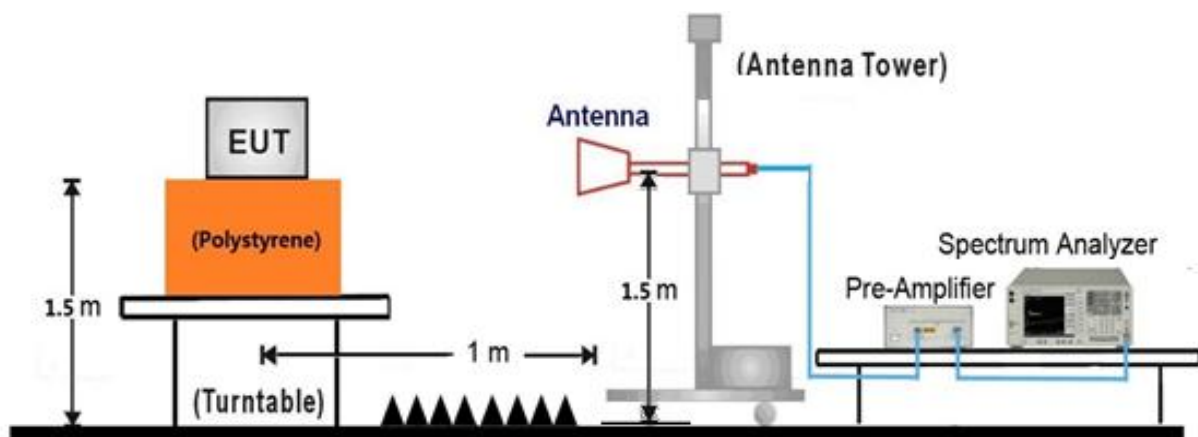
30MHz ~ 1GHz Test Setup:



1GHz ~ 18GHz Test Setup:

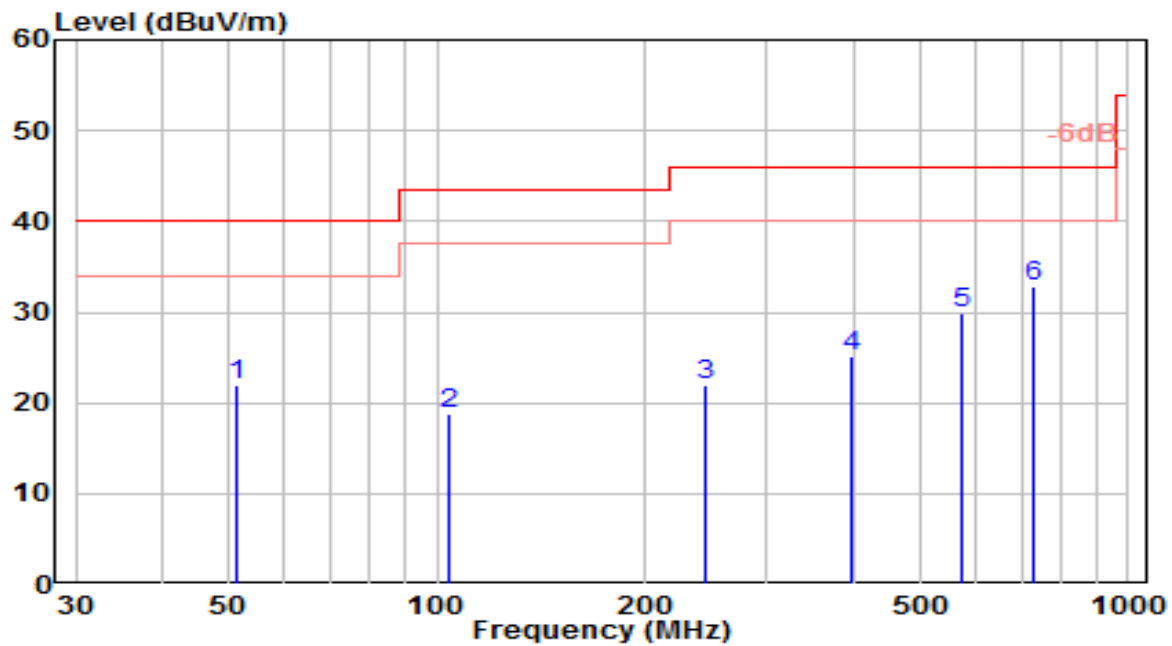


18GHz ~40GHz Test Setup:



7.8.5. Test Result

EUT	Transmitter	Date of Test	2025-06-05
Factor	VULB 9162	Temp. / Humidity	22°C /58%
Polarity	Horizontal	Site / Test Engineer	AC1 / Todd
Test Mode	TX-Sub-1G 903MHz_Alpha 612XJ	Test Voltage	By Battery

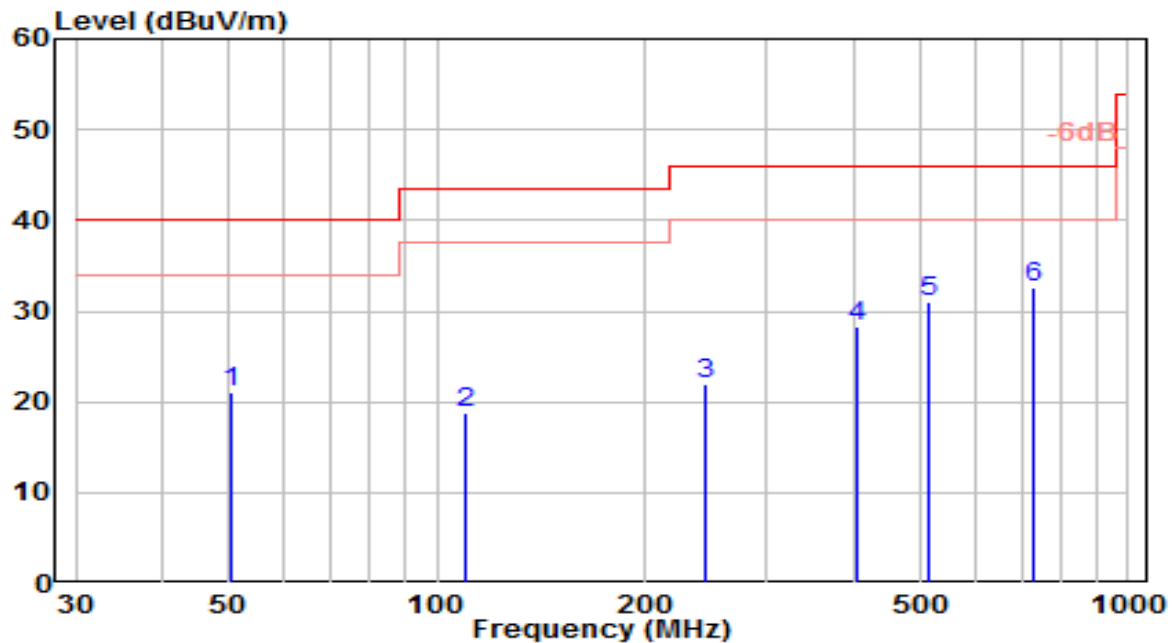


No	Frequency (MHz)	Reading (dBUV)	C.F (dB/m)	Measurement (dBUV/m)	Margin (dB)	Limit (dBUV/m)	Height (cm)	Angle (deg)	Remark (QP/PK/AV)
1	51.340	0.81	21.06	21.87	-18.13	40.00	100	320	QP
2	103.720	0.07	18.83	18.90	-24.60	43.50	150	260	QP
3	244.370	1.79	20.13	21.92	-24.08	46.00	100	65	QP
4	396.660	1.27	23.75	25.02	-20.98	46.00	100	55	QP
5	573.200	3.08	26.75	29.82	-16.18	46.00	150	210	QP
6	* 729.370	3.67	29.23	32.90	-13.10	46.00	100	315	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	Transmitter	Date of Test	2025-06-05
Factor	VULB 9162	Temp. / Humidity	22°C /58%
Polarity	Vertical	Site / Test Engineer	AC1 / Todd
Test Mode	TX-Sub-1G 903MHz_Alpha 612XJ	Test Voltage	By Battery

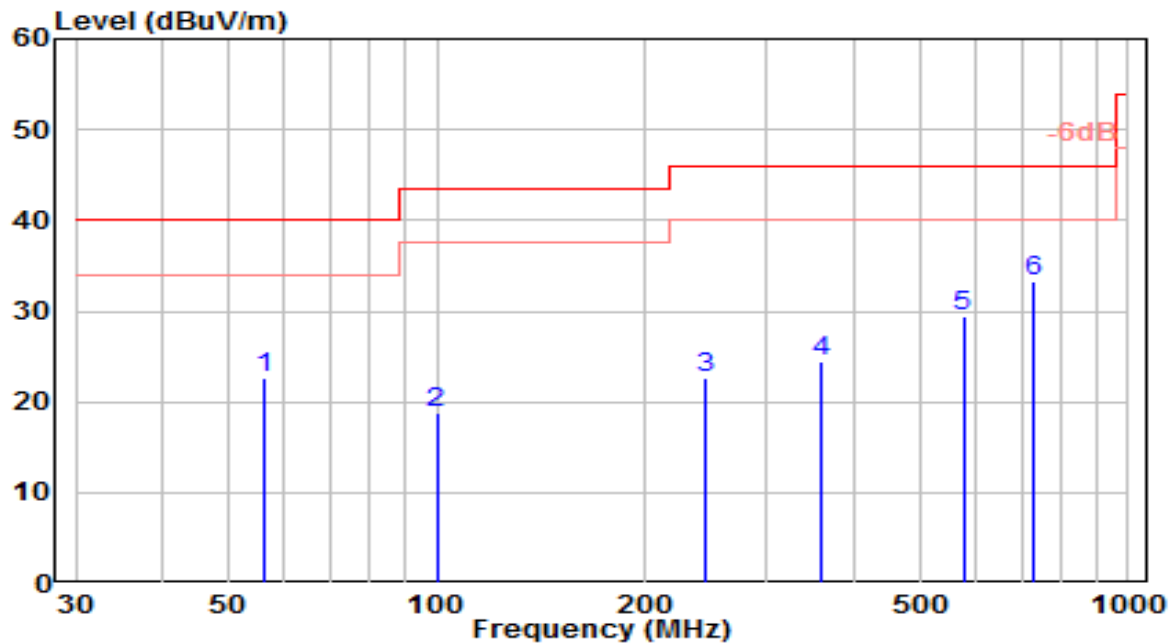


No	Frequency (MHz)	Reading (dBUV)	C.F (dB/m)	Measurement (dBUV/m)	Margin (dB)	Limit (dBUV/m)	Height (cm)	Angle (deg)	Remark (QP/PK/AV)
1	50.370	-0.07	21.19	21.12	-18.88	40.00	100	35	QP
2	109.540	0.09	18.74	18.83	-24.67	43.50	150	55	QP
3	244.370	1.82	20.13	21.95	-24.05	46.00	100	220	QP
4	406.360	4.32	23.87	28.20	-17.80	46.00	100	325	QP
5	515.970	5.43	25.68	31.12	-14.88	46.00	100	170	QP
6	* 731.310	3.35	29.26	32.61	-13.39	46.00	100	235	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	Transmitter	Date of Test	2025-06-05
Factor	VULB 9162	Temp. / Humidity	22°C /58%
Polarity	Horizontal	Site / Test Engineer	AC1 / Todd
Test Mode	TX-Sub-1G 915MHz_Alpha 612XJ	Test Voltage	By Battery

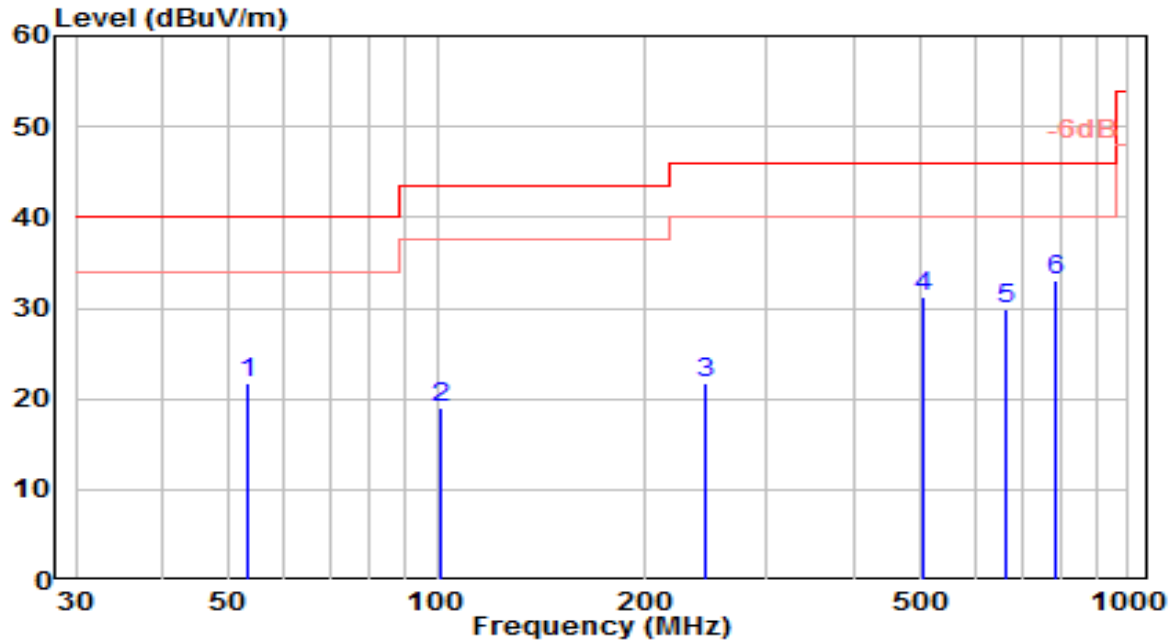


No	Frequency (MHz)	Reading (dBuV)	C.F (dB/m)	Measurement (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Height (cm)	Angle (deg)	Remark (QP/PK/AV)
1	56.190	2.24	20.42	22.66	-17.34	40.00	150	75	QP
2	99.840	0.03	18.86	18.89	-24.61	43.50	100	30	QP
3	244.370	2.46	20.13	22.59	-23.41	46.00	150	145	QP
4	359.800	1.25	23.14	24.40	-21.60	46.00	150	140	QP
5	577.080	2.64	26.86	29.50	-16.50	46.00	150	340	QP
6	* 732.280	4.06	29.28	33.33	-12.67	46.00	150	310	QP

Note:

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

EUT	Transmitter	Date of Test	2025-06-05
Factor	VULB 9162	Temp. / Humidity	22°C /58%
Polarity	Vertical	Site / Test Engineer	AC1 / Todd
Test Mode	TX-Sub-1G 915MHz_Alpha 612XJ	Test Voltage	By Battery

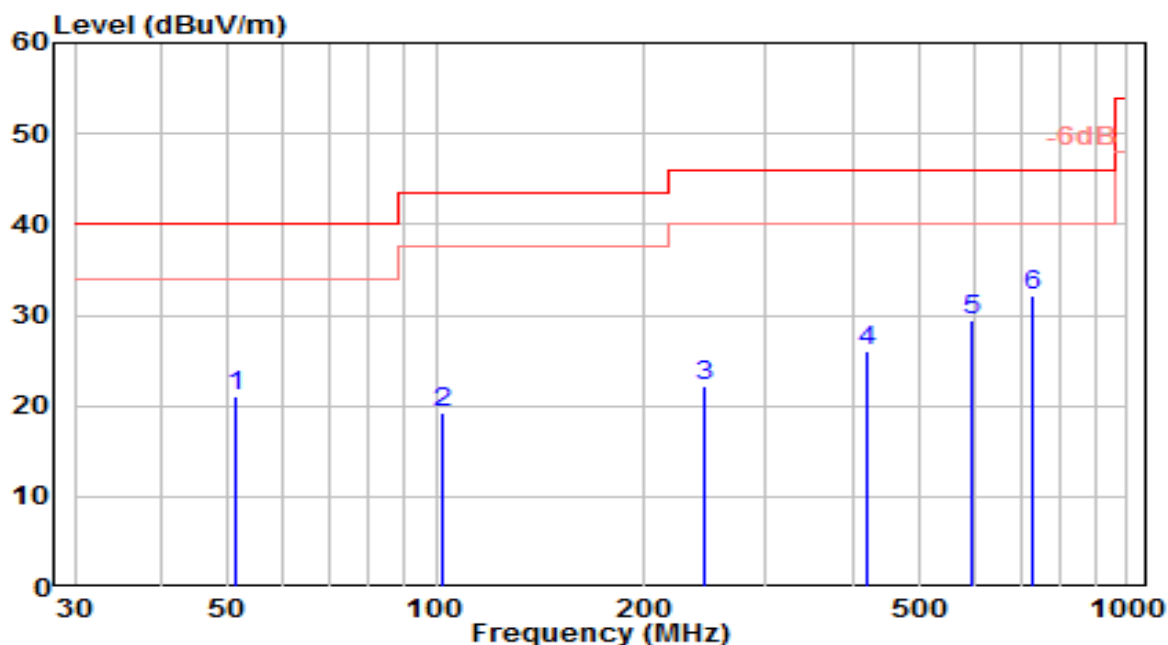


No	Frequency (MHz)	Reading (dBUV)	C.F (dB/m)	Measurement (dBUV/m)	Margin (dB)	Limit (dBUV/m)	Height (cm)	Angle (deg)	Remark (QP/PK/AV)
1	53.280	0.98	20.80	21.79	-18.21	40.00	150	240	QP
2	100.810	0.07	18.88	18.95	-24.55	43.50	100	50	QP
3	245.340	1.56	20.18	21.74	-24.26	46.00	150	50	QP
4	503.360	5.71	25.53	31.24	-14.76	46.00	100	195	QP
5	663.410	2.75	27.24	29.99	-16.01	46.00	150	260	QP
6	* 787.570	3.18	29.97	33.14	-12.86	46.00	100	135	QP

Note:

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

EUT	Transmitter	Date of Test	2025-06-05
Factor	VULB 9162	Temp. / Humidity	22°C /58%
Polarity	Horizontal	Site / Test Engineer	AC1 / Todd
Test Mode	TX-Sub-1G 927.5MHz_Alpha 612XJ	Test Voltage	By Battery

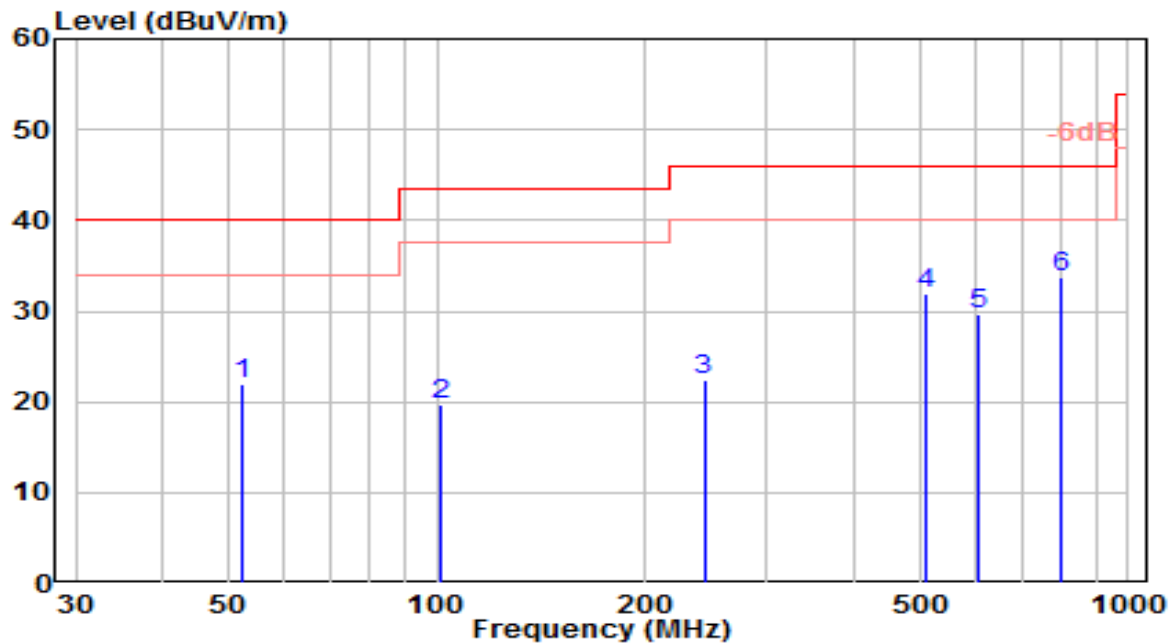


No	Frequency (MHz)	Reading (dBUV)	C.F (dB/m)	Measurement (dBUV/m)	Margin (dB)	Limit (dBUV/m)	Height (cm)	Angle (deg)	Remark (QP/PK/AV)
1	51.340	0.03	21.06	21.10	-18.90	40.00	150	215	QP
2	101.780	0.33	18.86	19.19	-24.31	43.50	100	250	QP
3	244.370	2.04	20.13	22.17	-23.83	46.00	150	360	QP
4	420.910	1.99	24.01	26.01	-19.99	46.00	150	75	QP
5	596.480	2.03	27.40	29.43	-16.57	46.00	150	150	QP
6	* 730.340	3.01	29.24	32.25	-13.75	46.00	150	315	QP

Note:

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

EUT	Transmitter	Date of Test	2025-06-05
Factor	VULB 9162	Temp. / Humidity	22°C /58%
Polarity	Vertical	Site / Test Engineer	AC1 / Todd
Test Mode	TX-Sub-1G 927.5MHz_Alpha 612XJ	Test Voltage	By Battery

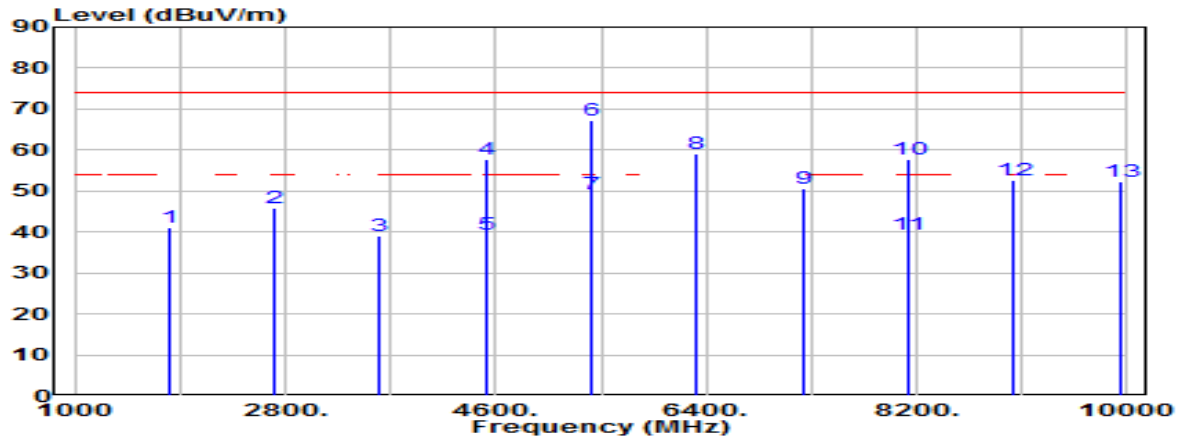


No	Frequency (MHz)	Reading (dBUV)	C.F (dB/m)	Measurement (dBUV/m)	Margin (dB)	Limit (dBUV/m)	Height (cm)	Angle (deg)	Remark (QP/PK/AV)
1	52.310	1.09	20.93	22.02	-17.98	40.00	100	45	QP
2	100.810	0.73	18.88	19.61	-23.89	43.50	100	290	QP
3	243.400	2.26	20.08	22.34	-23.66	46.00	150	265	QP
4	509.180	6.38	25.60	31.98	-14.02	46.00	100	190	QP
5	609.090	2.33	27.35	29.68	-16.32	46.00	150	30	QP
6	* 799.210	3.68	30.08	33.76	-12.24	46.00	100	160	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	Transmitter	Date of Test	2025-06-10
Factor	BBHA 9120D	Temp. / Humidity	23°C /55%
Polarity	Horizontal	Site / Test Engineer	AC1 / Todd
Test Mode	TX-Sub-1G 903MHz_Alpha 612XJ	Test Voltage	By Battery

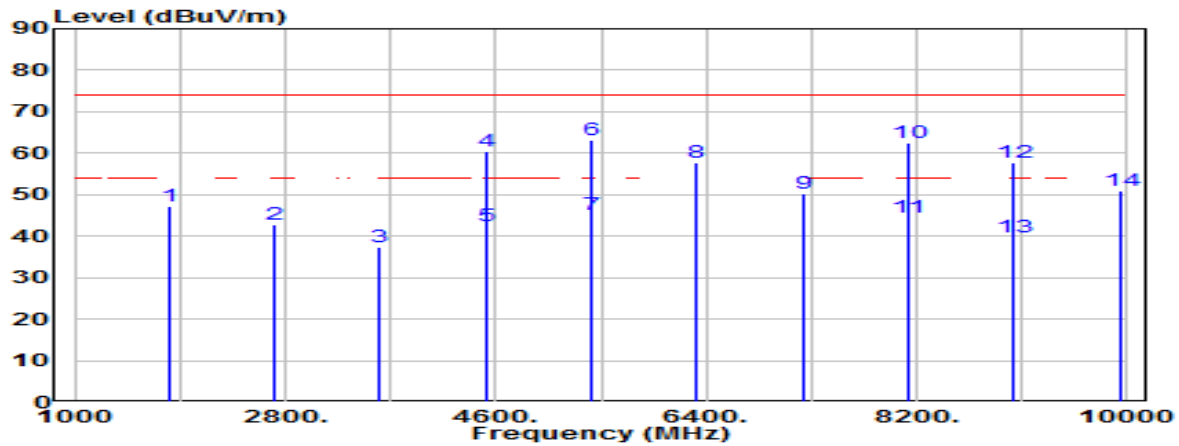


No	Frequency (MHz)	Reading (dBuV)	C.F (dB/m)	Measurement (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Height (cm)	Angle (deg)	Remark (QP/PK/AV)
1	1806.344	45.18	-4.06	41.12	-32.88	74.00	200	76	Peak
2	2708.594	48.04	-2.28	45.76	-28.24	74.00	200	24	Peak
3	3612.531	39.48	-0.44	39.04	-34.96	74.00	200	204	Peak
4	4514.781	54.93	2.69	57.63	-16.37	74.00	200	55	Peak
5	4514.781	N/A	N/A	39.53	-14.47	54.00	200	55	Average
6	* 5418.719	63.33	4.08	67.41	-6.59	74.00	200	155	Peak
7	* 5418.719	N/A	N/A	49.31	-4.70	54.00	200	155	Average
8	6320.688	51.60	7.44	59.03	-14.97	74.00	200	88	Peak
9	7225.469	39.21	11.27	50.48	-23.52	74.00	200	151	Peak
10	8128.844	45.20	12.45	57.64	-16.36	74.00	200	119	Peak
11	8128.844	N/A	N/A	39.54	-14.46	54.00	200	119	Average
12	9031.656	38.27	14.53	52.80	-21.20	74.00	200	163	Peak
13	9944.313	36.56	15.59	52.15	-21.85	74.00	200	202	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.
5. Average factor (20Log(1/Duty Cycle)) is 18.1dB.
6. Average Measurement = Peak Measurement - Average factor.

EUT	Transmitter	Date of Test	2025-06-10
Factor	BBHA 9120D	Temp. / Humidity	23°C /55%
Polarity	Vertical	Site / Test Engineer	AC1 / Todd
Test Mode	TX-Sub-1G 903MHz_Alpha 612XJ	Test Voltage	By Battery

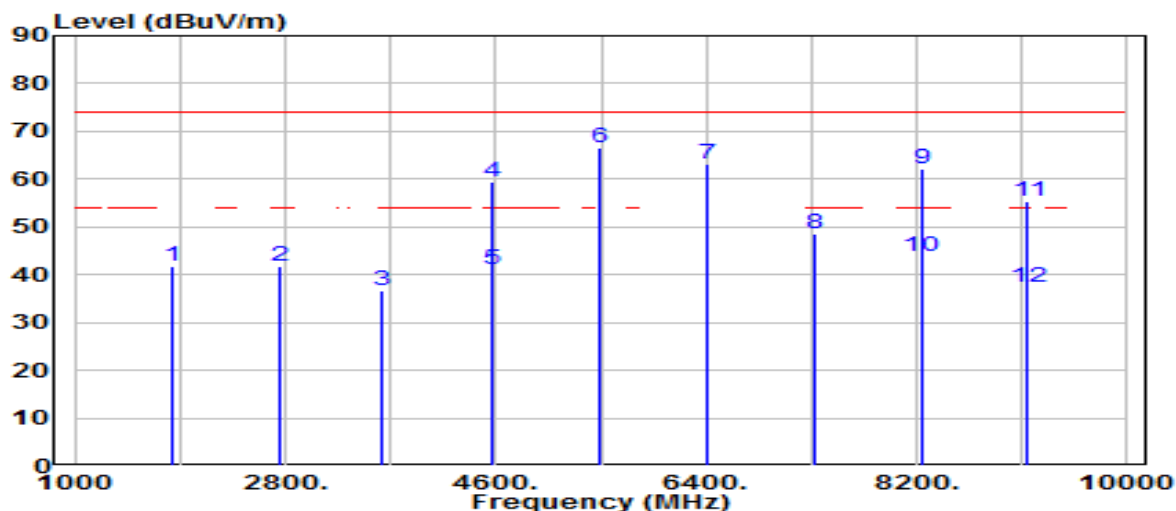


No	Frequency (MHz)	Reading (dBuV)	C.F (dB/m)	Measurement (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Height (cm)	Angle (deg)	Remark (QP/PK/AV)
1	1805.500	51.37	-4.07	47.31	-26.69	74.00	200	189	Peak
2	2709.438	45.05	-2.28	42.77	-31.23	74.00	200	13	Peak
3	3611.969	37.82	-0.45	37.38	-36.62	74.00	200	117	Peak
4	4514.219	57.82	2.69	60.51	-13.49	74.00	200	149	Peak
5	4514.219	N/A	N/A	42.41	-11.59	54.00	200	149	Average
6	* 5419.000	59.25	4.08	63.34	-10.66	74.00	200	225	Peak
7	* 5419.000	N/A	N/A	45.23	-8.77	54.00	200	225	Average
8	6321.813	50.45	7.44	57.89	-16.11	74.00	200	109	Peak
9	7223.500	38.89	11.26	50.15	-23.85	74.00	200	8	Peak
10	8126.594	50.03	12.44	62.47	-11.53	74.00	200	157	Peak
11	8126.594	N/A	N/A	44.37	-9.63	54.00	200	157	Average
12	9029.688	43.14	14.53	57.67	-16.33	74.00	200	189	Peak
13	9029.688	N/A	N/A	39.57	-14.43	54.00	200	189	Average
14	9946.844	35.33	15.60	50.93	-23.07	74.00	200	326	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.
5. Average factor ($20\log(1/\text{Duty Cycle})$) is 18.1dB.
6. Average Measurement = Peak Measurement - Average factor.

EUT	Transmitter	Date of Test	2025-06-10
Factor	BBHA 9120D	Temp. / Humidity	23°C /55%
Polarity	Horizontal	Site / Test Engineer	AC1 / Todd
Test Mode	TX-Sub-1G 915MHz_Alpha 612XJ	Test Voltage	By Battery

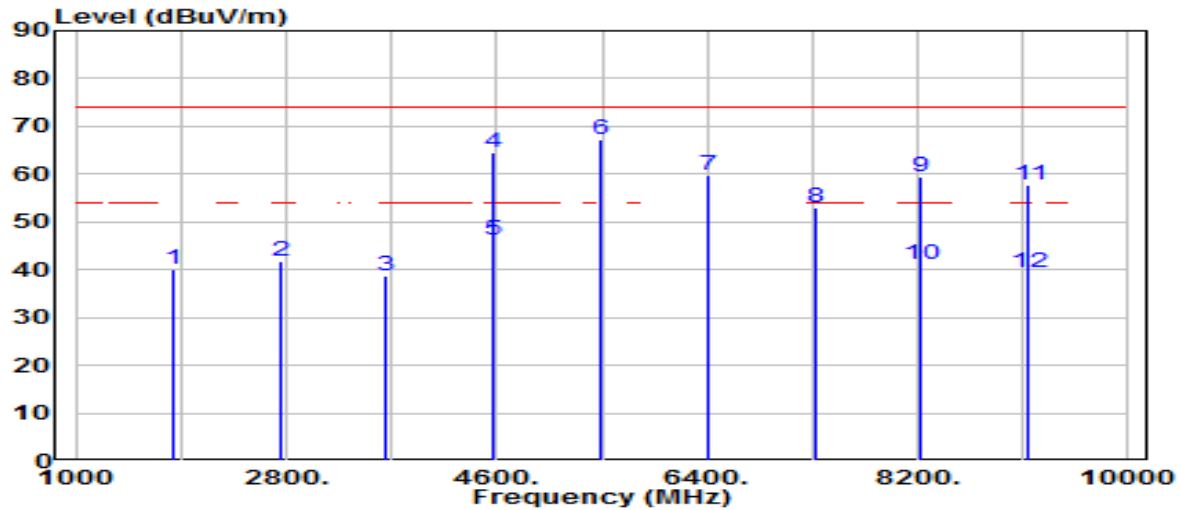


No	Frequency (MHz)	Reading (dBuV)	C.F (dB/m)	Measurement (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Height (cm)	Angle (deg)	Remark (QP/PK/AV)
1	1829.688	45.75	-4.03	41.72	-32.28	74.00	200	16	Peak
2	2744.875	44.02	-2.33	41.69	-32.31	74.00	200	36	Peak
3	3630.531	36.99	-0.39	36.59	-37.41	74.00	200	12	Peak
4	4574.688	56.52	2.83	59.35	-14.65	74.00	200	216	Peak
5	4574.688	N/A	N/A	41.25	-12.75	54.00	200	216	Average
6	* 5489.031	62.30	4.13	66.43	-7.57	74.00	200	81	Peak
7	6404.219	55.25	7.86	63.10	-10.90	74.00	200	109	Peak
8	7321.375	36.79	11.75	48.54	-25.46	74.00	200	12	Peak
9	8236.281	49.34	12.66	62.00	-12.00	74.00	200	216	Peak
10	* 8236.281	N/A	N/A	43.90	-10.10	54.00	200	216	Average
11	9151.188	40.77	14.61	55.38	-18.62	74.00	200	153	Peak
12	9151.188	N/A	N/A	37.28	-16.72	54.00	200	153	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.
5. Average factor (20Log(1/Duty Cycle)) is 18.1dB.
6. Average Measurement = Peak Measurement - Average factor.

EUT	Transmitter	Date of Test	2025-06-10
Factor	BBHA 9120D	Temp. / Humidity	23°C /55%
Polarity	Vertical	Site / Test Engineer	AC1 / Todd
Test Mode	TX-Sub-1G 915MHz_Alpha 612XJ	Test Voltage	By Battery

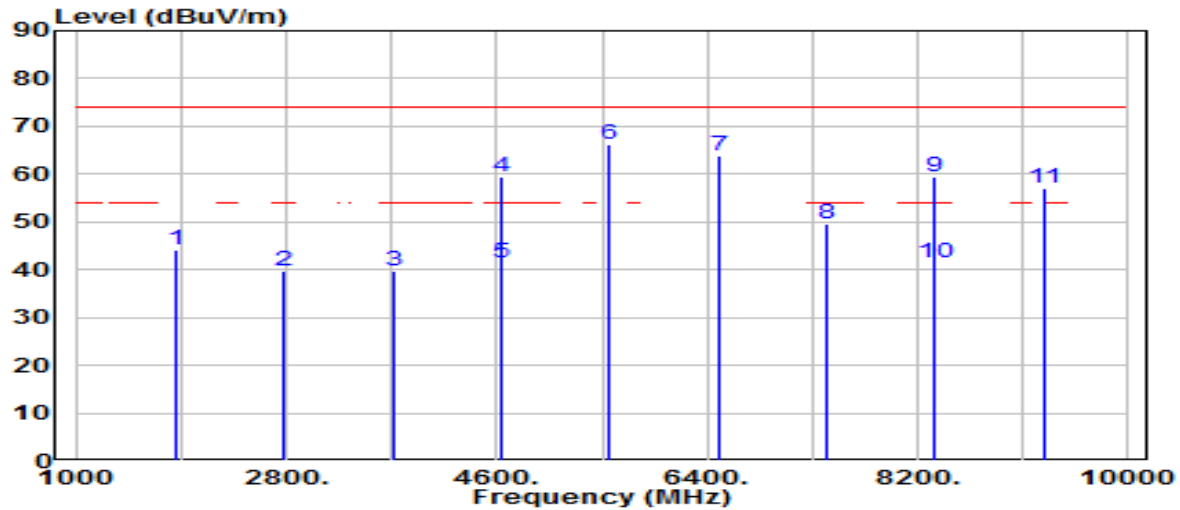


No	Frequency (MHz)	Reading (dBuV)	C.F (dB/m)	Measurement (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Height (cm)	Angle (deg)	Remark (QP/PK/AV)
1	1829.406	44.16	-4.03	40.14	-33.86	74.00	200	360	Peak
2	2745.156	44.11	-2.33	41.77	-32.23	74.00	200	163	Peak
3	3659.219	38.97	-0.32	38.65	-35.35	74.00	200	123	Peak
4	4574.406	61.56	2.83	64.39	-9.61	74.00	200	175	Peak
5	* 4574.406	N/A	N/A	46.29	-7.71	54.00	200	175	Average
6	* 5489.313	62.99	4.13	67.12	-6.88	74.00	200	171	Peak
7	6406.188	51.93	7.87	59.80	-14.20	74.00	200	357	Peak
8	7319.969	41.20	11.74	52.95	-21.05	74.00	200	159	Peak
9	8234.031	46.69	12.65	59.35	-14.65	74.00	200	219	Peak
10	8234.031	N/A	N/A	41.25	-12.76	54.00	200	219	Average
11	9152.031	42.98	14.61	57.59	-16.41	74.00	200	236	Peak
12	9152.031	N/A	N/A	39.50	-14.50	54.00	200	236	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.
5. Average factor ($20\log(1/\text{Duty Cycle})$) is 18.1dB.
6. Average Measurement = Peak Measurement - Average factor.

EUT	Transmitter	Date of Test	2025-06-10
Factor	BBHA 9120D	Temp. / Humidity	23°C /55%
Polarity	Horizontal	Site / Test Engineer	AC1 / Todd
Test Mode	TX-Sub-1G 927.5MHz_Alpha 612XJ	Test Voltage	By Battery

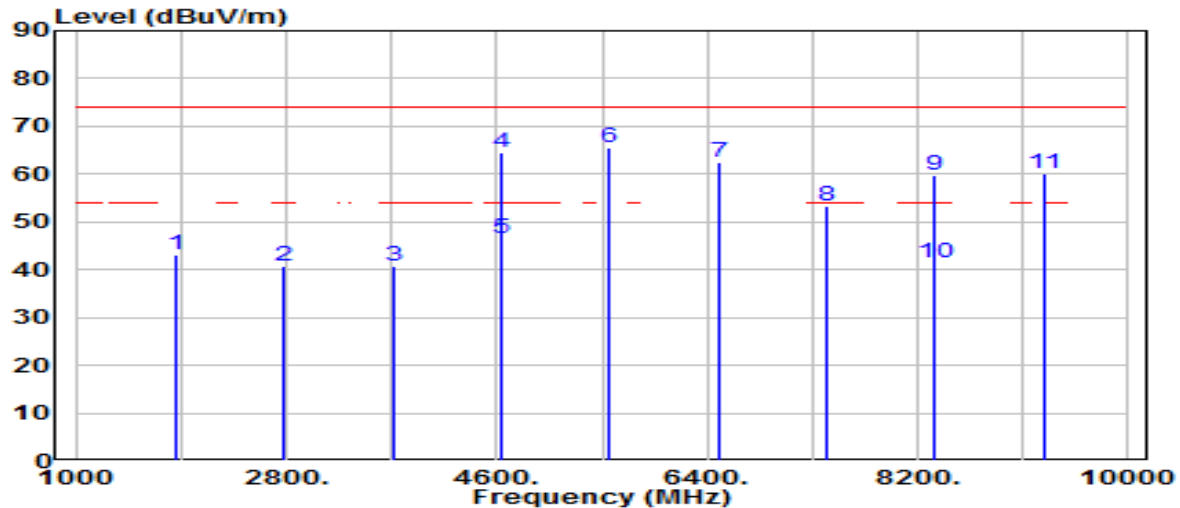


No	Frequency (MHz)	Reading (dBuV)	C.F (dB/m)	Measurement (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Height (cm)	Angle (deg)	Remark (QP/PK/AV)
1	1854.719	48.13	-3.99	44.14	-29.86	74.00	200	338	Peak
2	2782.844	42.01	-2.39	39.62	-34.38	74.00	200	23	Peak
3	3710.688	39.92	-0.18	39.74	-34.26	74.00	200	197	Peak
4	4638.250	56.43	2.97	59.40	-14.60	74.00	200	217	Peak
5	4638.250	N/A	N/A	41.30	-12.70	54.00	200	217	Average
6	* 5564.406	61.92	4.36	66.28	-7.72	74.00	200	92	Peak
7	6492.531	55.64	8.30	63.94	-10.06	74.00	200	133	Peak
8	7419.813	37.24	12.24	49.48	-24.52	74.00	200	197	Peak
9	8346.250	46.62	12.88	59.50	-14.50	74.00	200	261	Peak
10	* 8346.250	N/A	N/A	41.40	-12.60	54.00	200	261	Average
11	9273.531	42.44	14.69	57.13	-16.87	74.00	200	36	Peak

Note:

- "*", means this data is the worst emission level.
- C.F (Correction Factor) = Antenna Factor (dB/m) + Cable Loss (dB) – Preamplifier(dB).
- Measurement (dBuV/m) = Reading(dBuV) + C.F (Correction Factor).
- The emission levels of other frequencies are very lower than the limit and not show in test report.
- Average factor ($20\log(1/\text{Duty Cycle})$) is 18.1dB.
- Average Measurement = Peak Measurement - Average factor.

EUT	Transmitter	Date of Test	2025-06-10
Factor	BBHA 9120D	Temp. / Humidity	23°C /55%
Polarity	Vertical	Site / Test Engineer	AC1 / Todd
Test Mode	TX-Sub-1G 927.5MHz_Alpha 612XJ	Test Voltage	By Battery



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	1854.719	47.14	-3.99	43.16	-30.84	74.00	200	5	Peak
2	2782.000	43.13	-2.38	40.75	-33.25	74.00	200	176	Peak
3	3710.688	40.97	-0.18	40.79	-33.21	74.00	200	156	Peak
4	* 4636.563	61.55	2.97	64.52	-9.48	74.00	200	172	Peak
5	* 4636.563	N/A	N/A	46.42	-7.58	54.00	200	172	Average
6	5565.250	61.27	4.36	65.62	-8.38	74.00	200	168	Peak
7	6492.250	54.29	8.30	62.59	-11.41	74.00	200	0	Peak
8	7419.531	41.23	12.24	53.46	-20.54	74.00	200	164	Peak
9	8347.375	46.75	12.88	59.63	-14.37	74.00	200	172	Peak
10	8347.375	N/A	N/A	41.53	-12.47	54.00	200	172	Average
11	9276.344	45.33	14.69	60.02	-13.98	74.00	200	172	Peak

Note:

- "*", means this data is the worst emission level.
- C.F (Correction Factor) = Antenna Factor (dB/m) + Cable Loss (dB) – Preamplifier(dB).
- Measurement (dBuV/m) = Reading(dBuV) + C.F (Correction Factor).
- The emission levels of other frequencies are very lower than the limit and not show in test report.
- Average factor ($20\log(1/\text{Duty Cycle})$) is 18.1dB.
- Average Measurement = Peak Measurement - Average factor.

7.9. Radiated Restricted Band Edge Measurement

7.9.1. 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

7.9.2. Test Procedure Used

ANSI C63.10-2020 - Section 11.12.1

7.9.3. 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

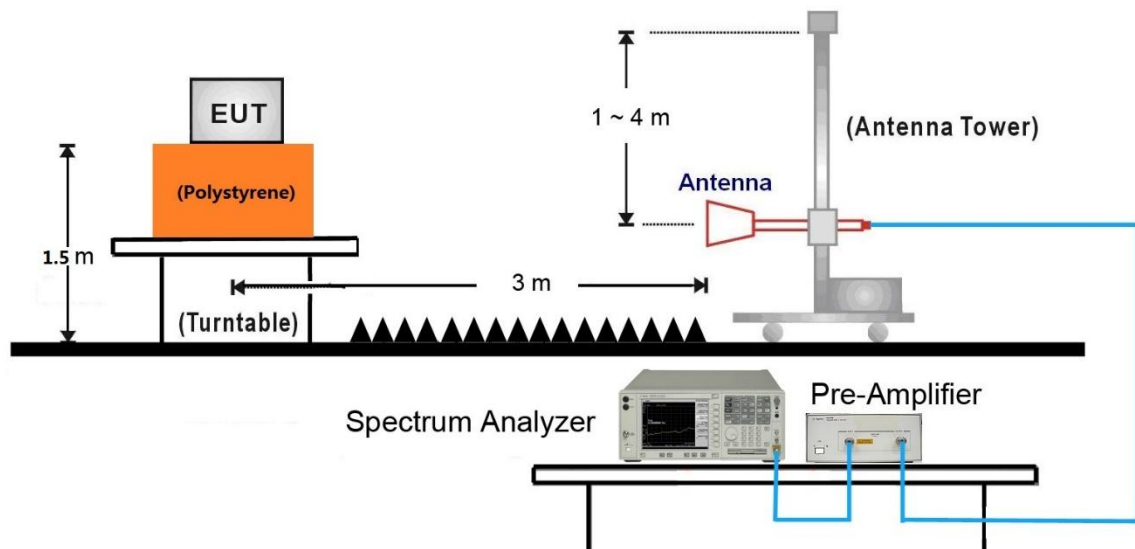
Frequency	RBW
9 ~ 150 kHz	200 ~ 300 Hz
0.15 ~ 30 MHz	9 ~ 10 kHz
30 ~ 1000 MHz	100 ~ 120 kHz
> 1000 MHz	1 MHz

Average Field Strength Measurements

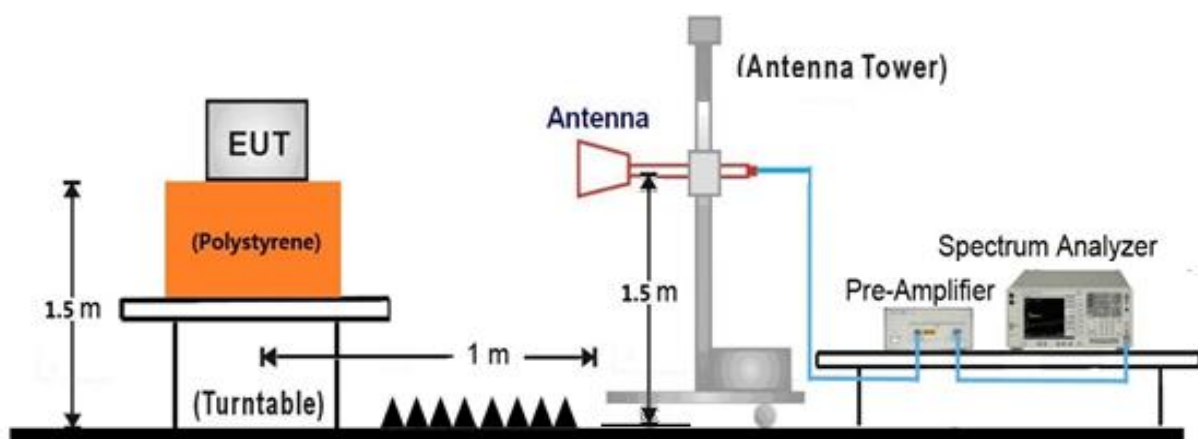
9. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest
10. RBW = 1MHz
11. VBW $\geq 1/T$
12. De As an alternative, the instrument may be set to linear detector mode. Ensure that video filtering is applied in linear voltage domain (rather than in a log or dB 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

7.9.4. Test Setup

1GHz ~ 18GHz Test Setup:

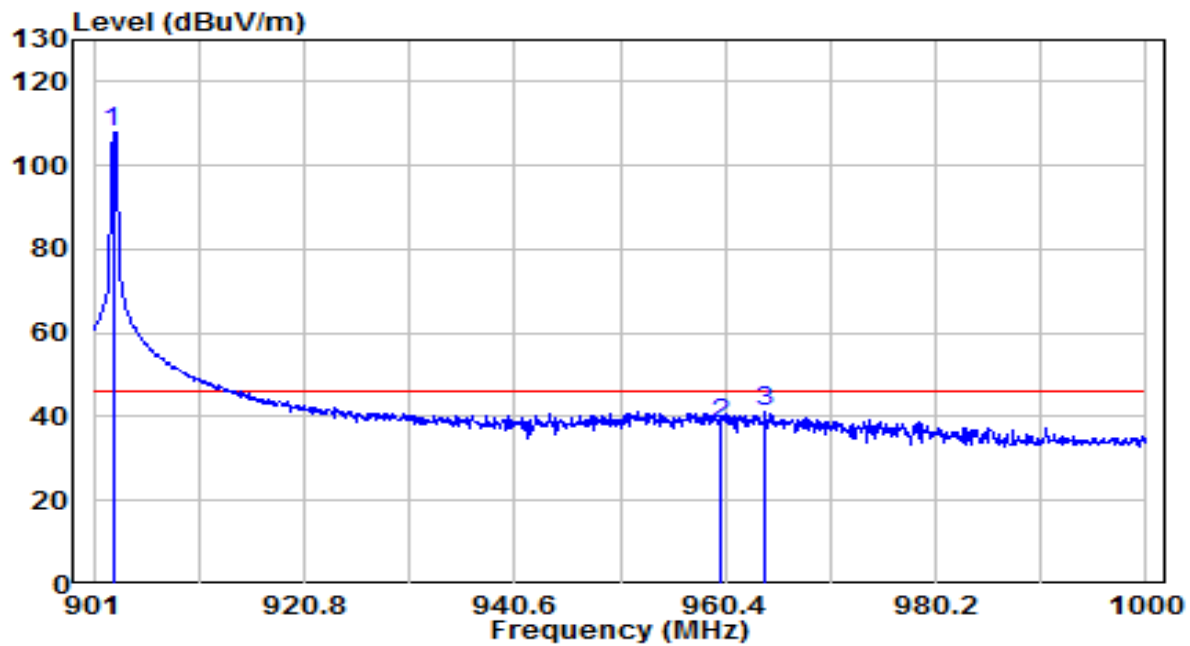


18GHz ~40GHz Test Setup:



7.9.5. Test Result

EUT	Transmitter	Date of Test	2025-06-13
Factor	VULB 9162	Temp. / Humidity	24°C /70%
Polarity	Horizontal	Site / Test Engineer	AC1 / Todd
Test Mode	TX-Sub-1G 903MHz_Alpha 612XJ	Test Voltage	By Battery

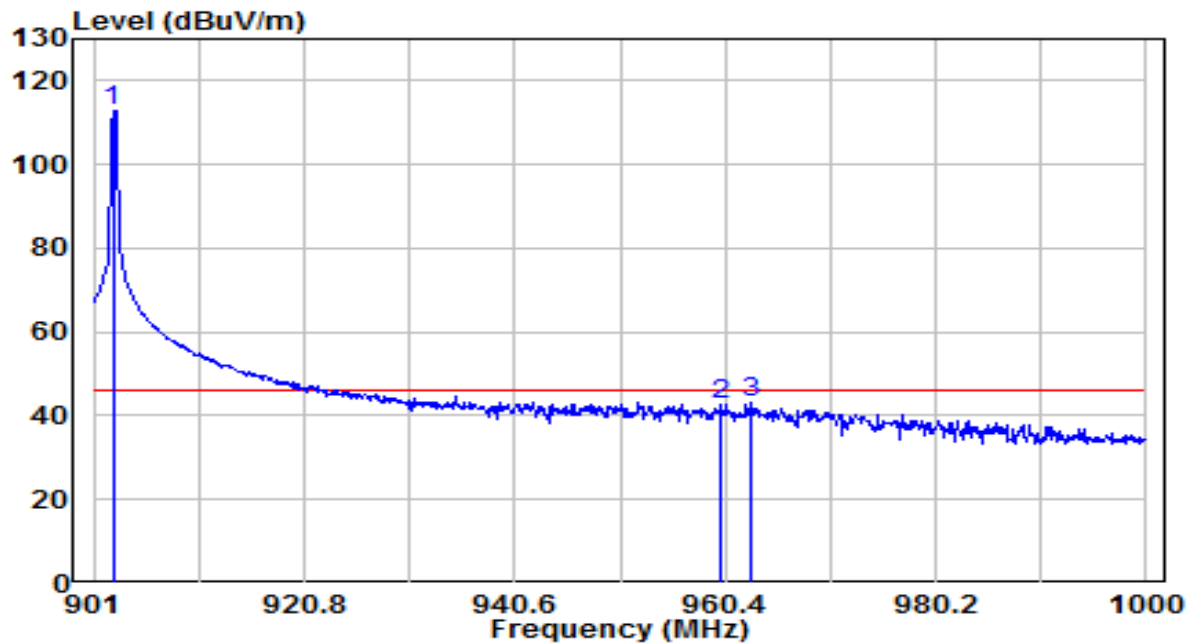


No	Frequency (MHz)	Reading (dBuV)	C.F (dB/m)	Measurement (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Height (cm)	Angle (deg)	Remark (QP/PK/AV)
1	902.782	76.07	31.66	107.73	N/A	N/A	115	131	Peak
2	960.000	6.50	31.90	38.40	-7.60	46.00	115	131	Peak
3	* 964.162	9.00	31.97	40.97	-5.03	46.00	115	131	Peak

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	Transmitter	Date of Test	2025-06-13
Factor	VULB 9162	Temp. / Humidity	24°C /70%
Polarity	Vertical	Site / Test Engineer	AC1 / Todd
Test Mode	TX-Sub-1G 903MHz_Alpha 612XJ	Test Voltage	By Battery

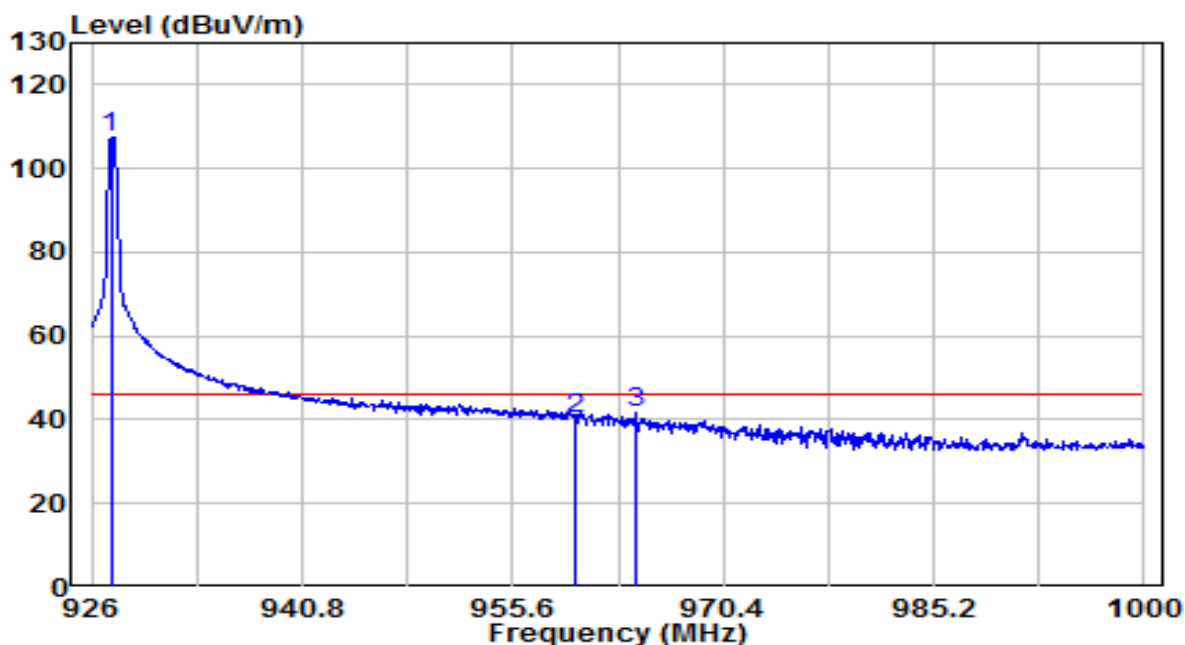


No	Frequency (MHz)	Reading (dBuV)	C.F (dB/m)	Measurement (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Height (cm)	Angle (deg)	Remark (QP/PK/AV)
1	902.782	81.18	31.66	112.85	N/A	N/A	100	156	Peak
2	960.000	10.68	31.90	42.58	-3.42	46.00	100	156	Peak
3	* 962.776	11.09	31.95	43.04	-2.96	46.00	100	156	Peak

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	Transmitter	Date of Test	2025-06-13
Factor	VULB 9162	Temp. / Humidity	24°C /70%
Polarity	Horizontal	Site / Test Engineer	AC1 / Todd
Test Mode	TX-Sub-1G 927.5MHz_Alpha 612XJ	Test Voltage	By Battery

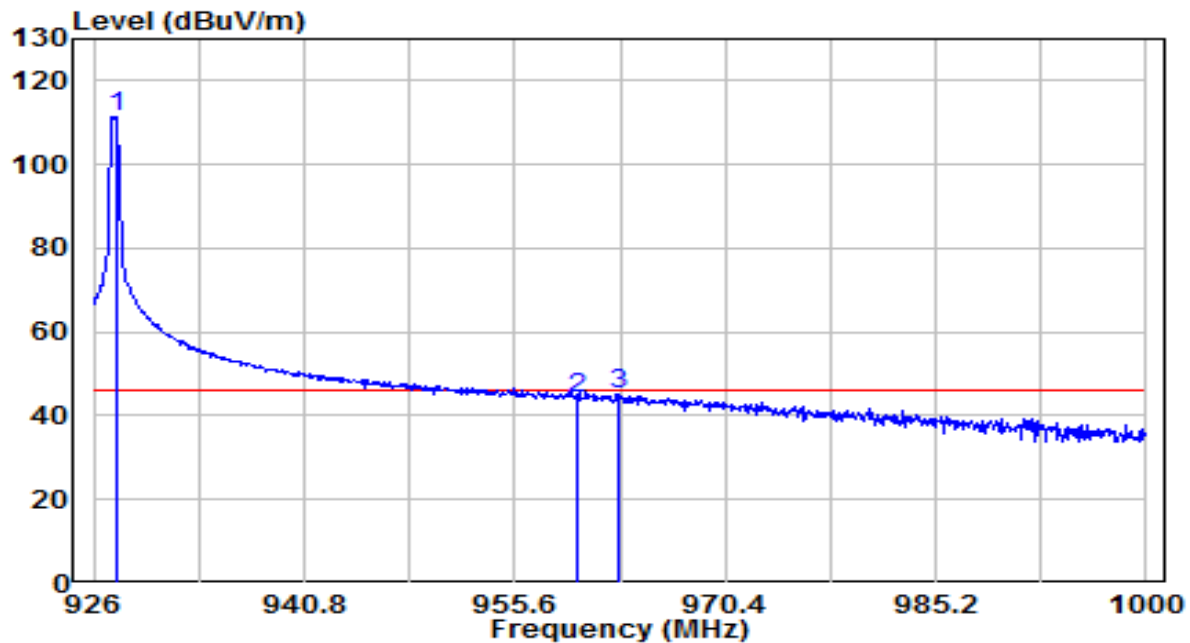


No	Frequency (MHz)	Reading (dBUV)	C.F (dB/m)	Measurement (dBUV/m)	Margin (dB)	Limit (dBUV/m)	Height (cm)	Angle (deg)	Remark (QP/PK/AV)
1	927.332	75.58	31.70	107.28	N/A	N/A	174	135	Peak
2	960.000	8.17	31.90	40.07	-5.93	46.00	174	135	Peak
3	* 964.332	9.56	31.97	41.53	-4.47	46.00	174	135	Peak

Note:

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

EUT	Transmitter	Date of Test	2025-06-13
Factor	VULB 9162	Temp. / Humidity	24°C /70%
Polarity	Vertical	Site / Test Engineer	AC1 / Todd
Test Mode	TX-Sub-1G 927.5MHz_Alpha 612XJ	Test Voltage	By Battery



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	927.628	79.88	31.70	111.58	N/A	N/A	139	156	Peak
2	960.000	12.33	31.90	44.23	-1.77	46.00	139	156	Peak
3	* 962.852	13.23	31.95	45.18	-0.82	46.00	139	156	Peak

Note:

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

7.10. AC Conducted Emissions Measurement

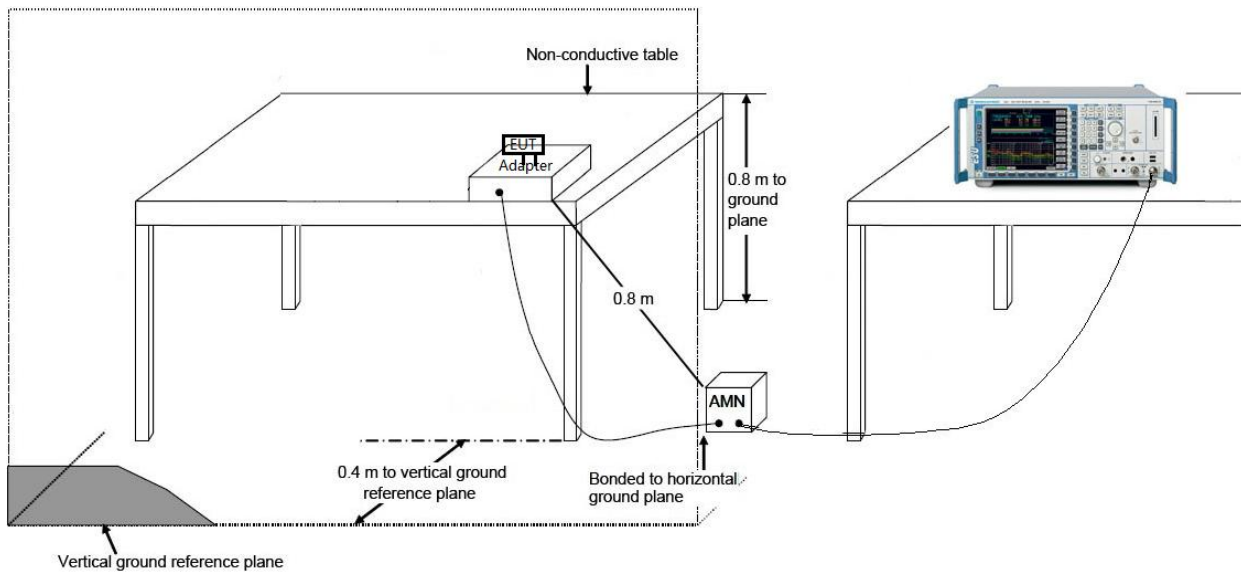
7.10.1. Test Limit

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.

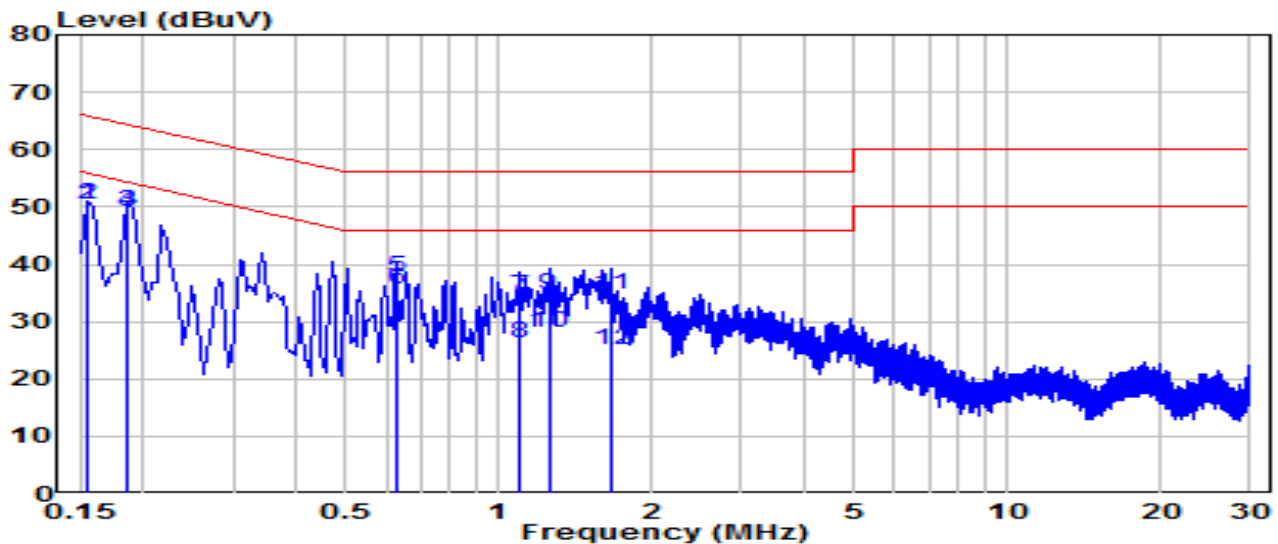
Note 2: The limit decreases linearly with the logarithm of the frequency in the range 0.15MHz to 0.5MHz.

7.10.2. Test Setup



7.10.3. Test Result

EUT	Transmitter	Date of Test	2025-09-26
Factor	CE_ENV216-L1 (Filter ON)	Temp. / Humidity	25.1°C /50%
Polarity	Line1	Site / Test Engineer	SR2 / Ryan
Test Mode	Battery Charge by Docking AC Input	Test Voltage	AC 120V/60Hz

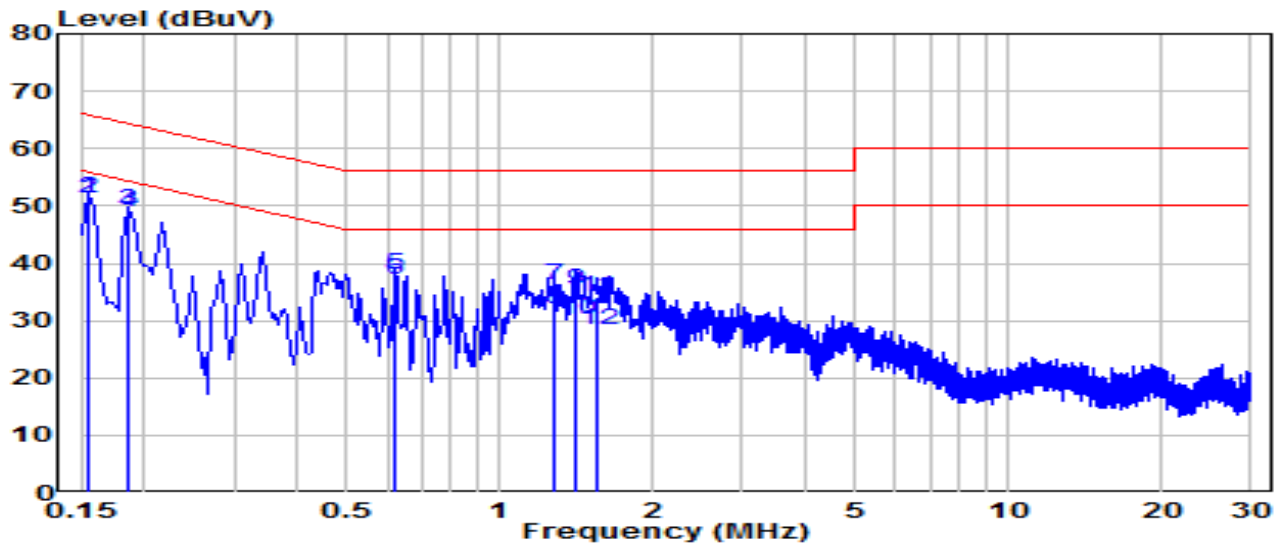


No	Frequency (MHz)	Reading (dBuV)	C.F (dB)	Measurement (dBuV)	Margin (dB)	Limit (dBuV)	Remark (QP/PK/AV)
1	0.154	40.72	9.63	50.35	-15.41	65.75	QP
2	0.154	40.66	9.63	50.29	-5.46	55.75	Average
3	* 0.186	39.70	9.62	49.32	-14.89	64.21	QP
4	* 0.186	39.62	9.62	49.24	-4.97	54.21	Average
5	0.627	28.20	9.65	37.84	-18.16	56.00	QP
6	0.627	26.12	9.65	35.77	-10.23	46.00	Average
7	1.099	24.85	9.67	34.52	-21.48	56.00	QP
8	1.099	16.58	9.67	26.26	-19.74	46.00	Average
9	1.252	24.92	9.68	34.60	-21.40	56.00	QP
10	1.252	18.55	9.68	28.23	-17.77	46.00	Average
11	1.662	24.92	9.69	34.61	-21.39	56.00	QP
12	1.662	15.36	9.69	25.05	-20.95	46.00	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	Transmitter	Date of Test	2025-09-26
Factor	CE_ENV216-N (Filter ON)	Temp. / Humidity	25.1°C /50%
Polarity	Neutral	Site / Test Engineer	SR2 / Ryan
Test Mode	Battery Charge by Docking AC Input	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	41.68	9.63	51.31	-14.45	65.75	QP
2	*	0.154	41.63	9.63	51.26	-4.50	55.75	Average
3		0.186	39.49	9.62	49.12	-15.09	64.21	QP
4		0.186	39.43	9.62	49.05	-5.16	54.21	Average
5		0.622	28.50	9.65	38.14	-17.86	56.00	QP
6		0.622	27.63	9.65	37.28	-8.72	46.00	Average
7		1.275	26.44	9.68	36.12	-19.88	56.00	QP
8		1.275	22.33	9.68	32.01	-13.99	46.00	Average
9		1.401	25.72	9.68	35.40	-20.60	56.00	QP
10		1.401	20.52	9.68	30.20	-15.80	46.00	Average
11		1.554	24.33	9.69	34.02	-21.98	56.00	QP
12		1.554	18.76	9.69	28.45	-17.55	46.00	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 **Transmitter**, is in compliance with Part 15C of the FCC Rules.

Appendix A : Test Photograph

Refer to “2505TWO601-UT” file.

Appendix B : External Photograph

Refer to “2505TWO601-UE” file.

Appendix C : Internal Photograph

Refer to “2505TWO601-UI” file.

_____ The End _____