

TEST REPORT

Application No.:	CPSN/00092/25
Applicant:	TIREVIO INC
Address of Applicant:	202 W RIDGE RD, GRIFFITH, IN 46319,USA
Manufacturer:	Viatire Tech Sdn. Bhd.
Address of Manufacturer:	1619 & 1620 Jalan Nafiri, Kawasan Perusahaan Valdor, 14200 Sungai Jawi, Pulau Pinang.
Equipment Under Test (EUT):	
EUT Name:	TMTIV01A
Model No.:	TMTIV01A
FCC ID:	2BQXA-TMTIV01A
Standard(s) :	FCC Part 15 Subpart C
Date of Receipt:	2025-06-30
Date of Test:	2025-07-07 to 2025-07-08
Date of Issue:	2025-09-17
Test Result:	The submitted sample was found to comply with the test requirement



EZMITH HAIKAL BIN AMIRNUDDIN
EMC/RF ENGINEER



AHMAD ZAKUAN BIN AMINUDIN
LABORATORY MANAGER



Test Report No.: CPEMRF/00044/25
Date: 2025-09-17

Revision Record		
Revision No.	Date	Remark
N/A	N/A	N/A

2 Test Summary

Emission Part (315MHz)				
Item	Standard	Method	Requirement	Result
Antenna Requirement	FCC Part 15 Subpart C	N/A	FCC Part 15 Subpart C §15.203	Pass
20dB bandwidth		ANSI C63.10:2013 Section 6.9	FCC Part 15 Subpart C §15.231 (c)	Pass
Dwell time		ANSI C63.10:2013 Section 7.8.4	FCC Part 15 Subpart C §15.231 (e)	Pass
Field Strength of the Fundamental Signal		ANSI C63.10:2013 Section 6.5	FCC Part 15 Subpart C §15.231 (e)	Pass
Radiated Emissions below 1GHz		ANSI C63.10:2013 Section 6.5	FCC Part 15 Subpart C §15.209	Pass
Radiated Emissions above 1GHz		ANSI C63.10:2013 Section 6.6	FCC Part 15 Subpart C §15.209	Pass
99% Bandwidth		RSS-Gen Section 6.7	RSS-210 A1.3	Pass
Frequency Stability		RSS-Gen Section 6.11	RSS-Gen Section 8.11	Note 1

N/A: Not applicable

Note 1: Frequency stability requested in RSS GEN S8.11 has been complied since the result of occupied bandwidth can demonstrate.

Emission Part (433.92MHz)

Item	Standard	Method	Requirement	Result
Antenna Requirement	FCC Part 15 Subpart C	N/A	FCC Part 15 Subpart C §15.203	Pass
20dB bandwidth		ANSI C63.10:2013 Section 6.9	FCC Part 15 Subpart C §15.231 (c)	Pass
Dwell time		ANSI C63.10:2013 Section 7.8.4	FCC Part 15 Subpart C §15.231 (e)	Pass
Field Strength of the Fundamental Signal		ANSI C63.10:2013 Section 6.5	FCC Part 15 Subpart C §15.231 (e)	Pass
Radiated Emissions below 1GHz		ANSI C63.10:2013 Section 6.4&6.5&6.6	FCC Part 15 Subpart C §15.231 (e) and 15.209	Pass
Radiated Emissions above 1GHz		ANSI C63.10:2013 Section 6.6	FCC Part 15 Subpart C §15.231 (e) and 15.209	Pass
99% Bandwidth		RSS-Gen Section 6.7	RSS-210 A1.3	Pass
Frequency Stability		RSS-Gen Section 6.11	RSS-Gen Section 8.11	Note 1

N/A: Not applicable

Note 1: Frequency stability requested in RSS GEN S8.11 has been complied since the result of occupied bandwidth can demonstrate.

Declaration of EUT Family Grouping:

N/A

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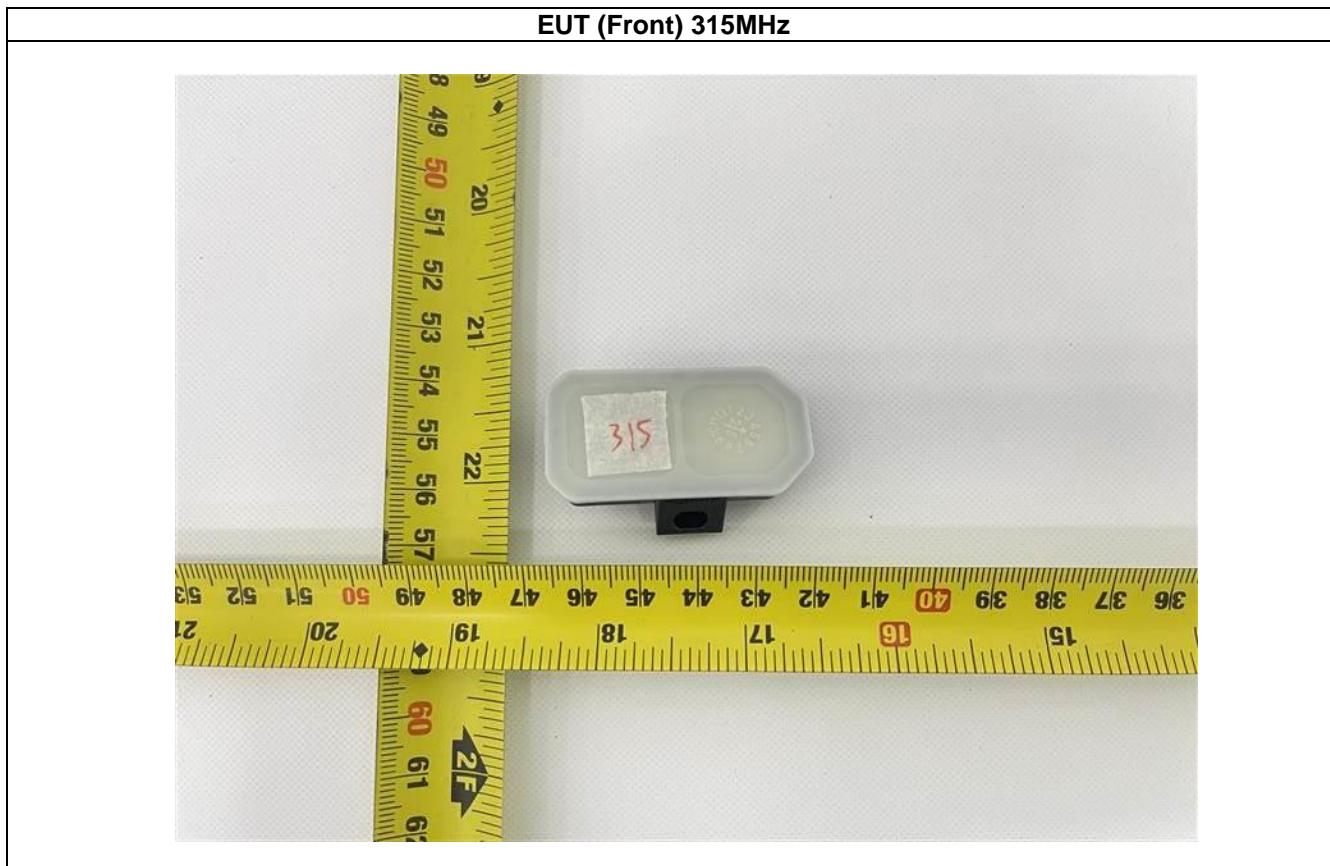
4 General Information

4.1 Details of E.U.T.

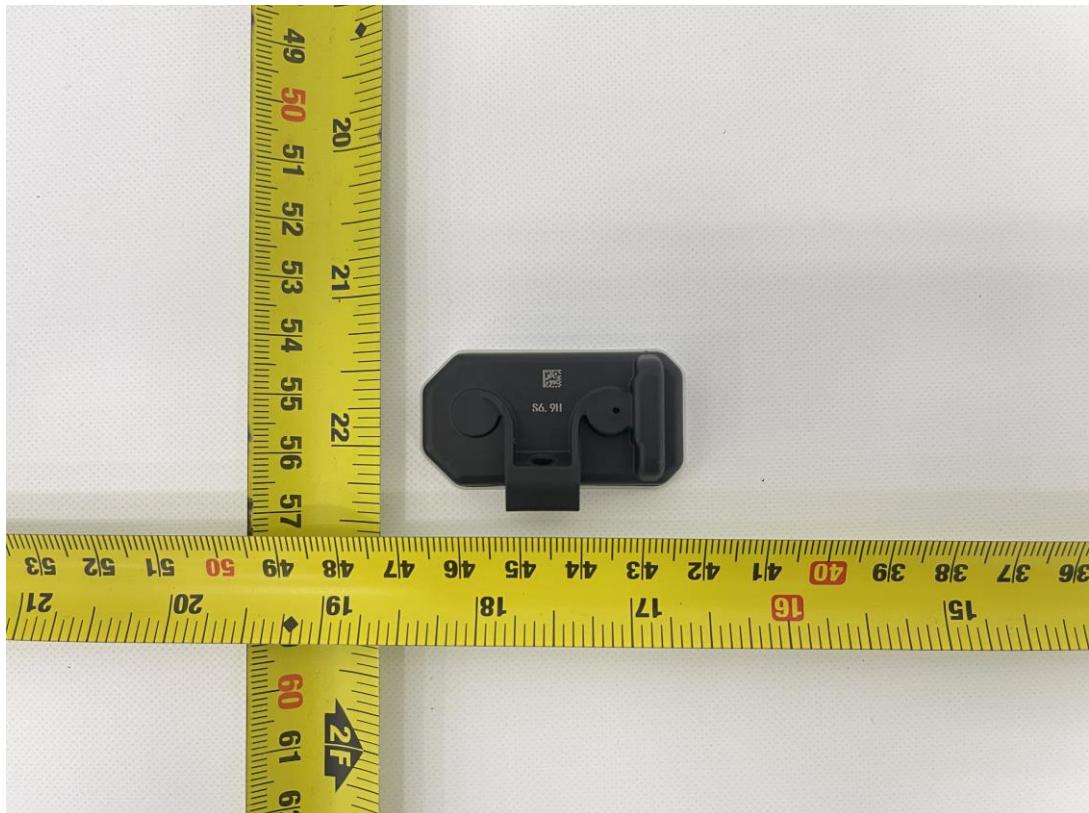
Rated voltage/frequency:	2.95 – 3.5VDC
Rated power:	N/A
Test voltage:	N/A
Clock frequency:	4MHz
Hardware version:	V1.0
Software version:	V1.0
Operating Frequency:	315MHz & 433.92MHz

Remark: The information in this section is provided by the applicant or manufacturer, SGS is not liable to the accuracy, suitability, reliability or/and integrity of the information.

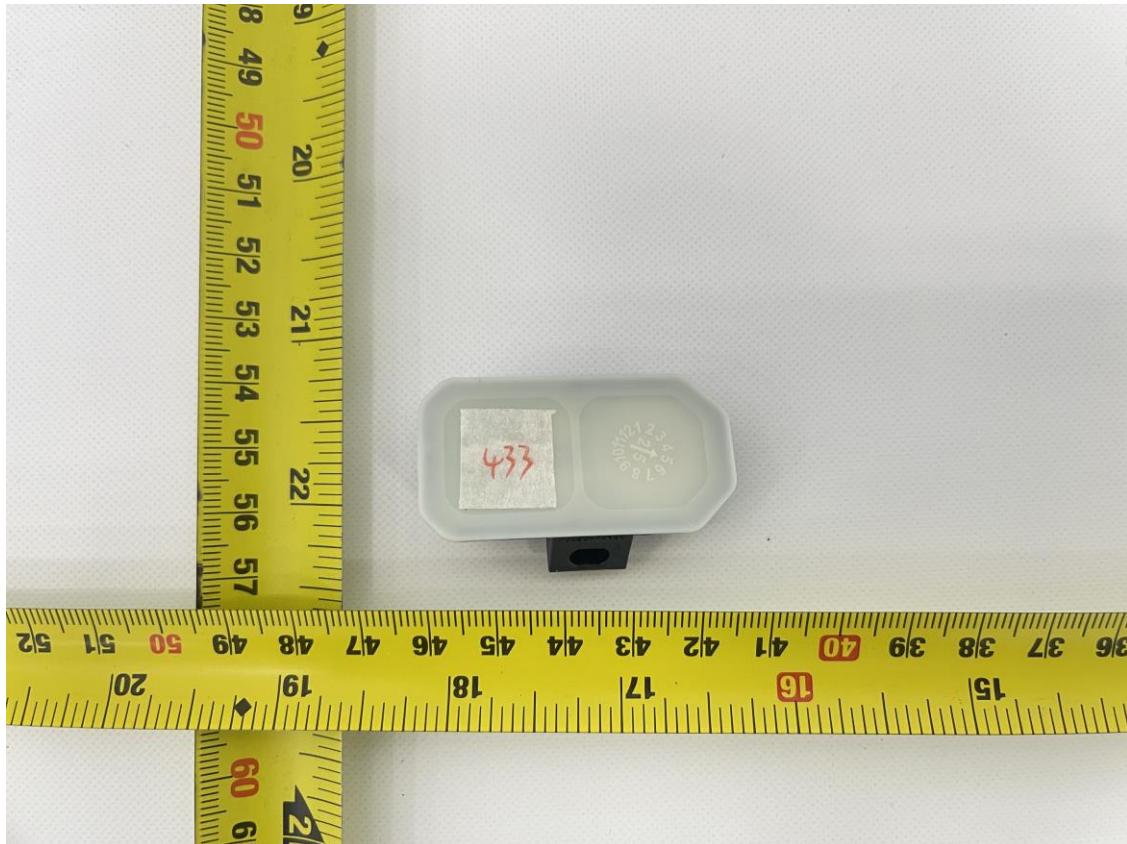
4.2 Photos of Test Item



EUT (Rear) 315MHz



EUT (Front) 433.92MHz



EUT (Rear) 433.92MHz



4.3 Description of Support Units

The EUT has been tested as an independent unit.

4.4 Modifications to the Test Item during Testing

N/A

4.5 Measurement Uncertainty

Emission		Measurement Uncertainty
Test Item		
Radiated emission		
Antenna requirement		
20dB Bandwidth		
Field strength of the fundamental signal		3.64dB (30MHz-1GHz) H 5.08dB (30MHz-1GHz) V 4.98dB (1GHz-6GHz)
Dwell time		
99% Bandwidth		
Frequency Stability		

Remark:

The U_{lab} (lab Uncertainty) is less than $U_{cisp/ETSI}$ (CISPR/ETSI Uncertainty), so the test results
 – compliance is deemed to occur if no measured disturbance level exceeds the disturbance limit.
 – non-compliance is deemed to occur if any measured disturbance level exceeds the disturbance limit.
 According to decision rule based on Clause 4.2 of CISPR 16-4-2, the EUT complied with the standards specified above.



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4.6 Test Location

All tests were performed at:

SGS (Malaysia) Sdn. Bhd.

No. 60, Jalan i-Park SAC 6, Taman Perindustrian i-Park SAC, 81400 Senai, Johor, Malaysia

Remark: No tests were sub-contracted.

4.7 Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

- **FCC Recognized Test Firm (Registration No.: 613970)**

SGS (Malaysia) Sdn. Bhd. has been recognized by the (FCC) Federal Communications Commission.

Designation Number: MY0007, Test Firm Registration Number: 613970

- **DSM Accreditation (SAMM NO: SAMM 382)**

SGS Senai has met the requirement of ISO/IEC 17025:2017 means the laboratory meets both the technical competence requirements and management system requirements that are necessary for it to consistently deliver technically valid test results and calibrations.

- **A2LA Accreditation (Certificate No. 7433.01)**

SGS (Malaysia) Sdn. Bhd. is accredited by the American Association for Laboratory Accreditation (A2LA).

4.8 Deviation from Standards

None.

4.9 Abnormalities from Standard Conditions

None.

4.10 Monitoring of EUT for All Immunity Test

Visual:	Monitored the EUT and observe any abnormality during the continuous cycle of EUT normal operation.
Audio:	N/A

5 Equipment List

Radiated Emission (30MHz-1GHz)				
Equipment	Equipment ID	Model	Manufacturer	Calibration Due
EMI Test Receiver	SN/EMRF/024	ESR7	Rohde & Schwarz	2026-04-10
Tri-log Antenna	SN/EMRF/011	VULB9163	Schwarzbeck	2025-08-04
Linear Programmable AC power source	SN/EMRF/085	6730	Extech Electronic Co. Ltd.	2025-10-06
ELEKTRA	SN/EMRF/092	4.61.0	Rohde & Schwarz	N/A

Radiated Emission (1GHz-6GHz)				
Equipment	Equipment ID	Model	Manufacturer	Calibration Due
EMI Test Receiver	SN/EMRF/024	ESR7	Rohde & Schwarz	2026-04-10
Broadband Horn Antenna	SN/EMRF/012	BBHA9120D	Schwarzbeck	2025-12-09
Low Noise Amplifier	SN/EMRF/054	SCU-18F	Rohde & Schwarz	2026-04-07
Linear Programmable AC power source	SN/EMRF/085	6730	Extech Electronic Co. Ltd.	2025-10-06
ELEKTRA	SN/EMRF/092	4.61.0	Rohde & Schwarz	N/A

20dB Bandwidth				
Equipment	Equipment ID	Model	Manufacturer	Calibration Due
EMI Test Receiver	SN/EMRF/024	ESR7	Rohde & Schwarz	2026-04-10
Tri-log Antenna	SN/EMRF/011	VULB9163	Schwarzbeck	2025-08-04
Linear Programmable AC power source	SN/EMRF/085	6730	Extech Electronic Co. Ltd.	2025-10-06
ELEKTRA	SN/EMRF/092	4.61.0	Rohde & Schwarz	N/A



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99% Bandwidth				
Equipment	Equipment ID	Model	Manufacturer	Calibration Due
EMI Test Receiver	SN/EMRF/024	ESR7	Rohde & Schwarz	2026-04-10
Tri-log Antenna	SN/EMRF/011	VULB9163	Schwarzbeck	2025-08-04
Linear Programmable AC power source	SN/EMRF/085	6730	Extech Electronic Co. Ltd.	2025-10-06
ELEKTRA	SN/EMRF/092	4.61.0	Rohde & Schwarz	N/A

Field Strength of the Fundamental Signal				
Equipment	Equipment ID	Model	Manufacturer	Calibration Due
EMI Test Receiver	SN/EMRF/024	ESR7	Rohde & Schwarz	2026-04-10
Tri-log Antenna	SN/EMRF/011	VULB9163	Schwarzbeck	2025-08-04
Linear Programmable AC power source	SN/EMRF/085	6730	Extech Electronic Co. Ltd.	2025-10-06
ELEKTRA	SN/EMRF/092	4.61.0	Rohde & Schwarz	N/A

Dwell time				
Equipment	Equipment ID	Model	Manufacturer	Calibration Due
EMI Test Receiver	SN/EMRF/024	ESR7	Rohde & Schwarz	2026-04-10
Tri-log Antenna	SN/EMRF/011	VULB9163	Schwarzbeck	2025-08-04
Linear Programmable AC power source	SN/EMRF/085	6730	Extech Electronic Co. Ltd.	2025-10-06
ELEKTRA	SN/EMRF/092	4.61.0	Rohde & Schwarz	N/A

6 Emission Test Results

6.1 Antenna requirement

Test Requirement: FCC Part 15 Subpart C §15.203

Test Method: ANSI C63.10-2013

Operating Frequency: 315MHz & 433.92MHz

6.1.1 Measurement Method

An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device

6.1.2 Measurement Data

Standard	Standard requirements (at least one of the following shall be applied)	Results
FCC Part 15 Subpart C §15.203	1. Permanently attached antenna 2. Unique coupling to the intentional radiator 3. Professionally installed radio. The installer shall be responsible for ensuring that the proper antenna is employed so that the limits in this part are not exceeded.	Pass
Remark	Option 1 is used	

6.2 20dB Bandwidth

Test Requirement: FCC Part 15 Subpart C 15.231 (c)

Test Method: ANSI C63.10-2013 Section 6.9

Limit:

Frequency range (MHz)	Limit
70-900 MHz	No wider than 0.25% of the center frequency
Above 900	No wider than 0.5% of the center frequency

6.2.1 E.U.T. Operation

Operating Environment:

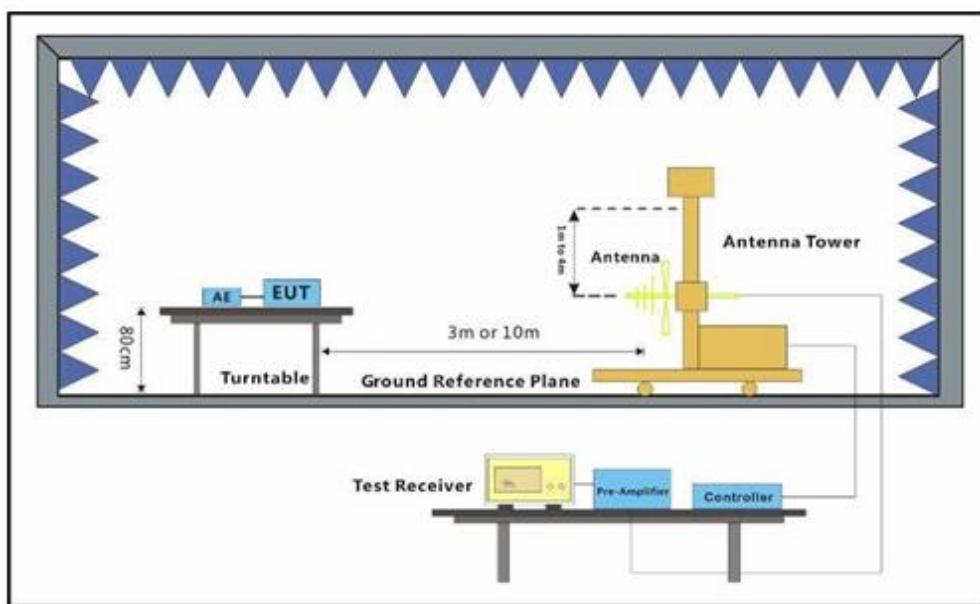
Temperature: 21.0 °C Humidity: 57.6 % RH Atmospheric Pressure : N/A mbar

Test Mode: Module continuously transmitted

Operating Frequency 315MHz

6.2.2 Test Setup Diagram

Refer to Setup Photographs.

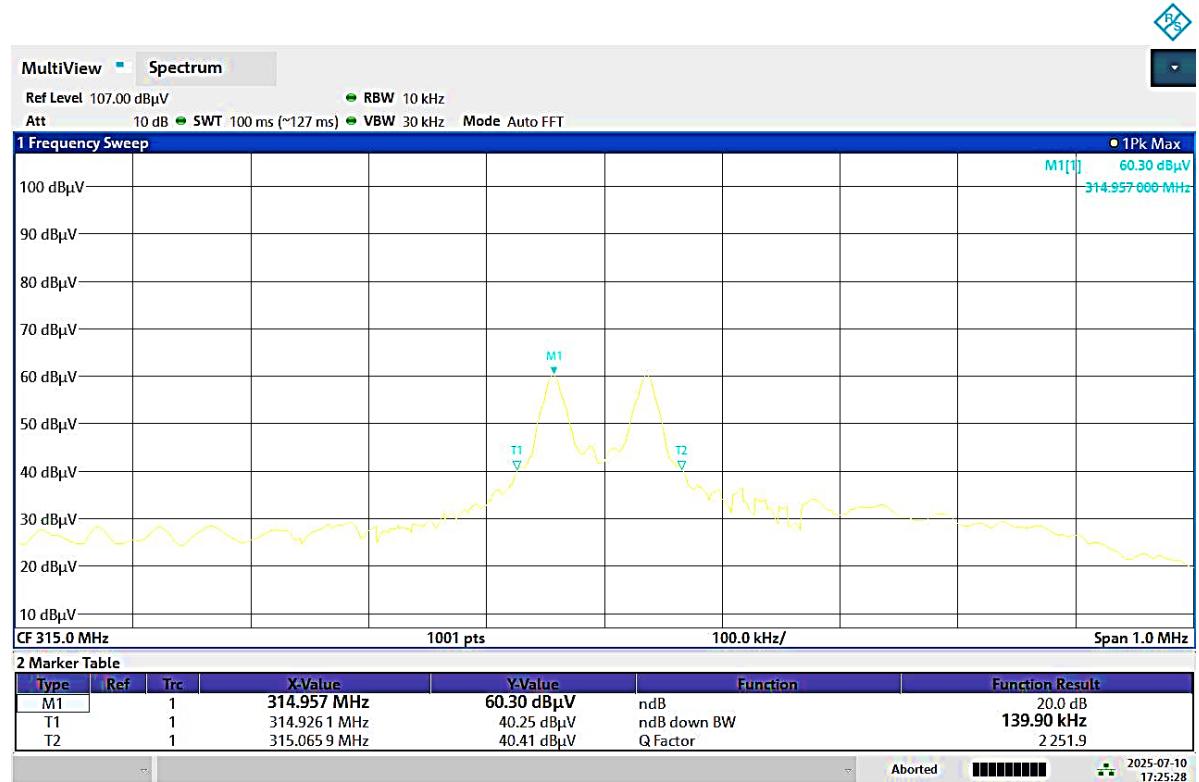


6.2.3 Measurement Method

The occupied bandwidth is measured as the width of the spectral envelope of the modulated signal, at an amplitude level reduced from a reference value by a specified ratio (or in decibels, a specified number of dB down from the reference value). Typical ratios, expressed in dB, are -6 dB, -20 dB, and -26 dB, corresponding to 6 dB BW, 20 dB BW, and 26 dB BW, respectively. In this subclause, the ratio is designated by “-xx dB.” The reference value is either the level of the unmodulated carrier or the highest level of the spectral envelope of the modulated signal, as stated by the applicable requirement. Some requirements might specify a specific maximum or minimum value for the “-xx dB” bandwidth; other requirements might specify that the “-xx dB” bandwidth be entirely contained within the authorized or designated frequency band.⁵³

6.2.4 Measurement Data

The bandwidth of the emission shall be no wider than 0.25% of the center frequency for devices operating above 70 MHz and below 900 MHz. For devices operating above 900 MHz, the emission shall be no wider than 0.5% of the center frequency. Bandwidth is determined at the points 20 dB down from the modulated carrier.

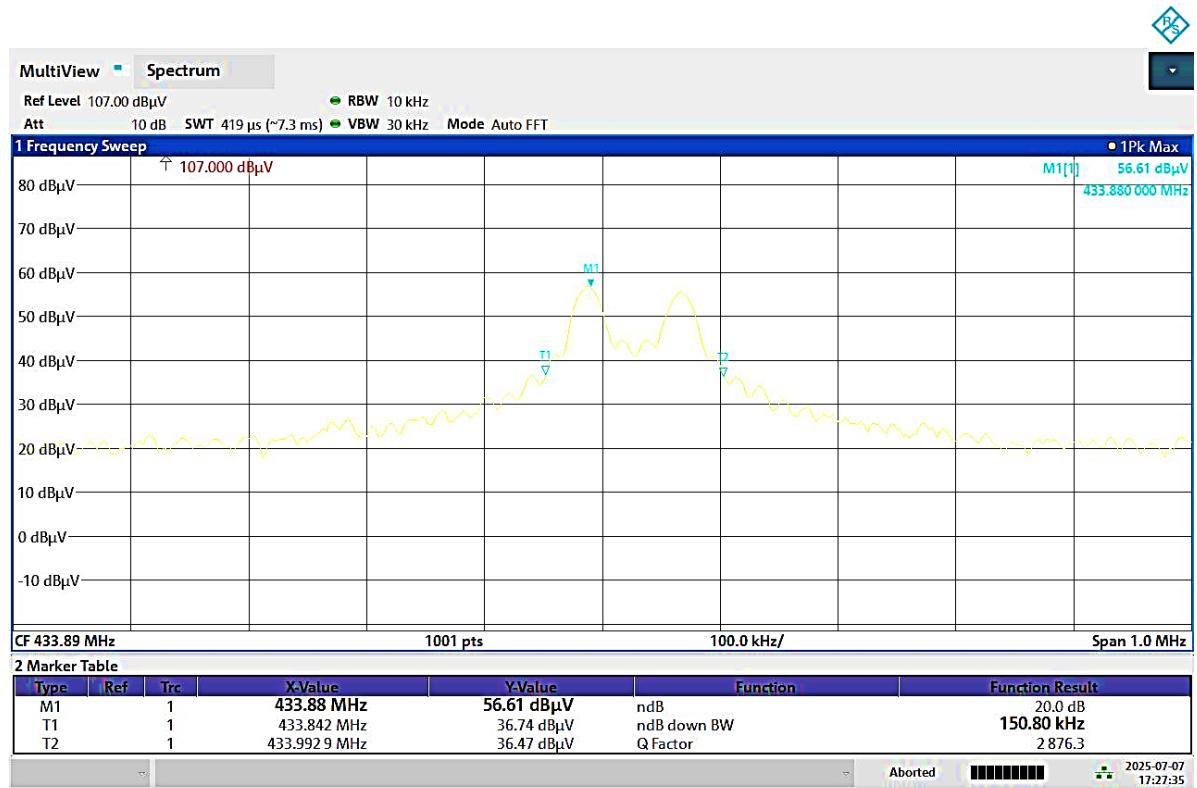


Frequency (MHz)	20dB bandwidth (kHz)	Limit (kHz)	Result
315	139.90	787.5	Pass

6.2.5 E.U.T. Operation

Operating Environment:

Temperature: 21.0 °C Humidity: 57.6 % RH Atmospheric Pressure : N/A mbar
Test Mode: Module continuously transmitted
Operating Frequency 433.92MHz



Frequency (MHz)	20dB bandwidth (kHz)	Limit (kHz)	Result
433.92	150.80	1085	Pass

6.3 Dwell Time

Test Requirement: FCC Part 15 Subpart C §15.231 (e)

Test Method: ANSI C63.10-2013 Section 7.8.4

Limit:

In addition, devices operated under the provisions of this paragraph shall be provided with a means for automatically limiting operation so that the duration of each transmission shall not be greater than one second and the silent period between transmissions shall be at least 30 times the duration of the transmission but in no case less than 10 seconds.

6.3.1 E.U.T. Operation

Operating Environment:

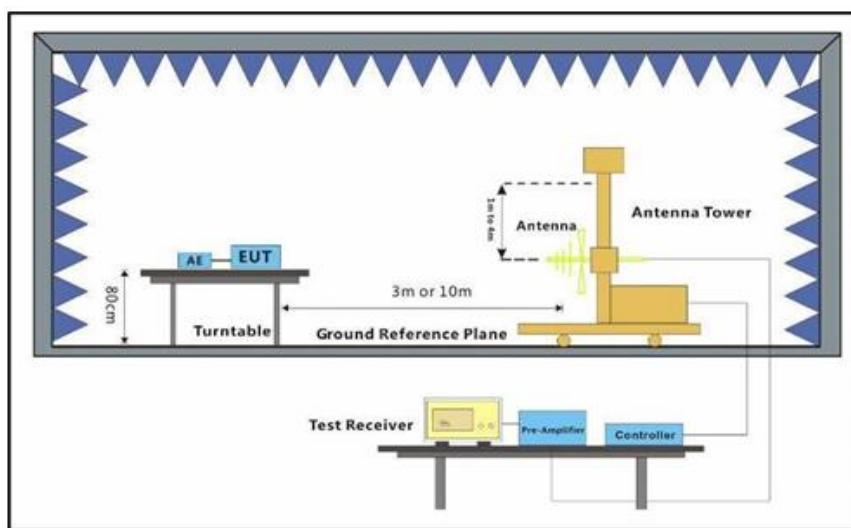
Temperature: 28.8 °C Humidity: 58.6 % RH Atmospheric Pressure : N/A mbar

Test Mode: Module continuously transmitted

Operating Frequency: 315MHz

6.3.2 Test Setup Diagram

Refer to Setup Photographs.

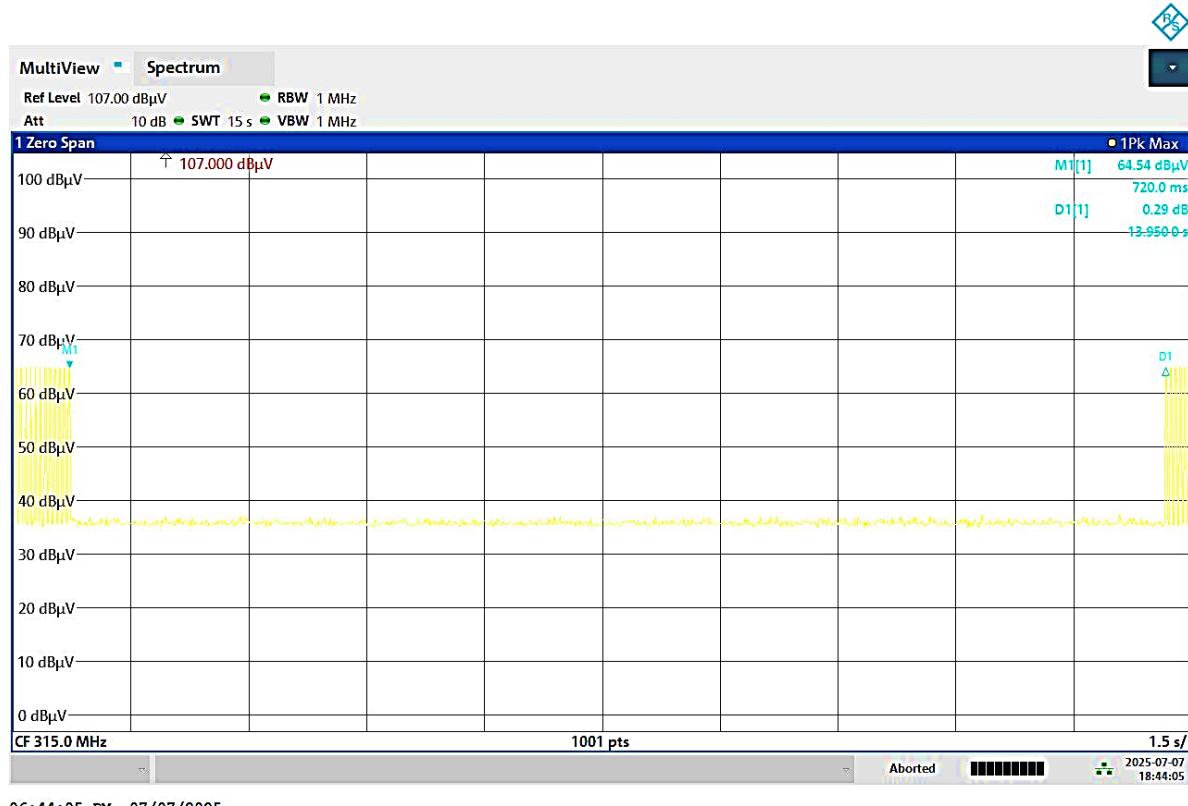


6.3.3 Measurement Method

Use the marker-delta function to determine the transmit time per hop. If this value varies with different modes of operation (data rate, modulation format, number of hopping channels, etc.), then repeat this test for each variation in transmit time. Repeat the measurement using a longer sweep time to determine the number of hops over the period specified in the requirements. The sweep time shall be equal to, or less than, the period specified in the requirements. Determine the number of hops over the sweep time and calculate the total number of hops in the period specified in the requirements, using the following equation:

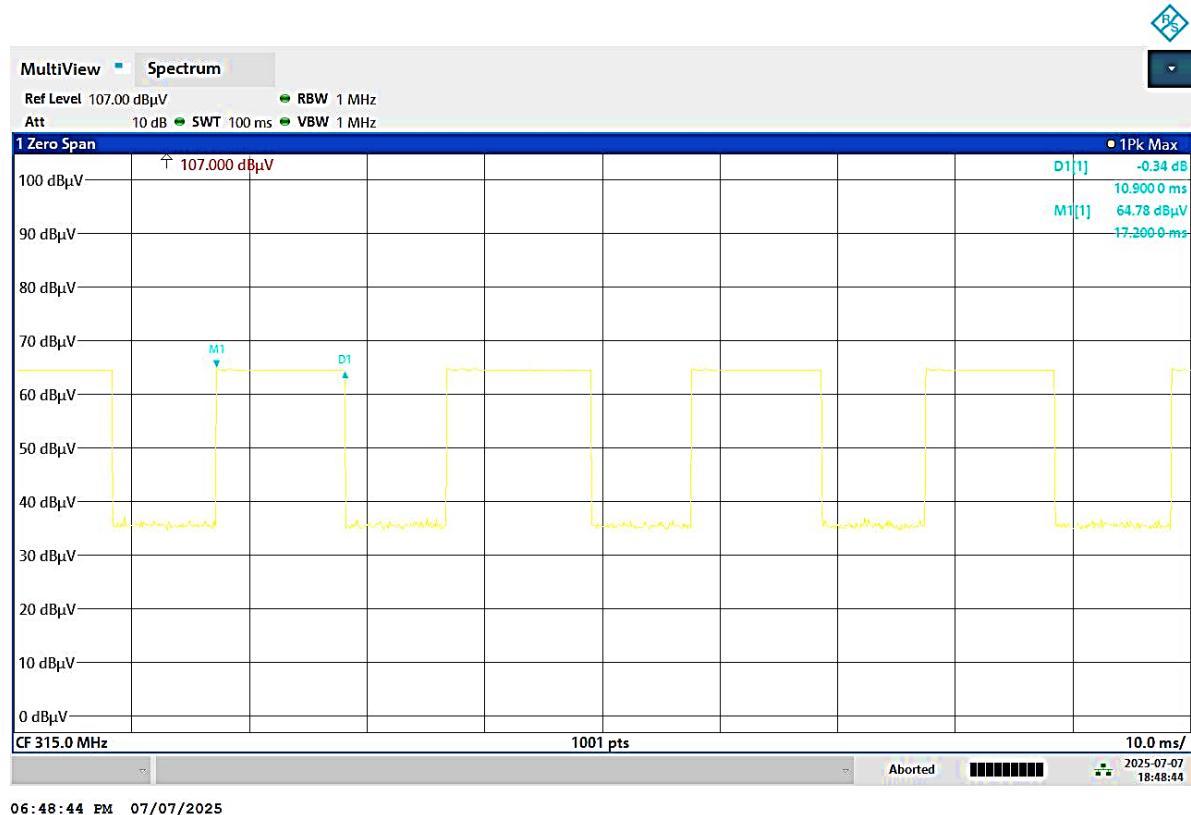
6.3.4 Measurement Data

Silent period between transmission



Test item	Measurement	Limit (s)	Result
Silent period between transmission	13.95s	≥10s	Pass

Duration of each transmission



Test item	Measurement	Limit (s)	Result
Duration of each transmission	10.90ms	≤1s	Pass

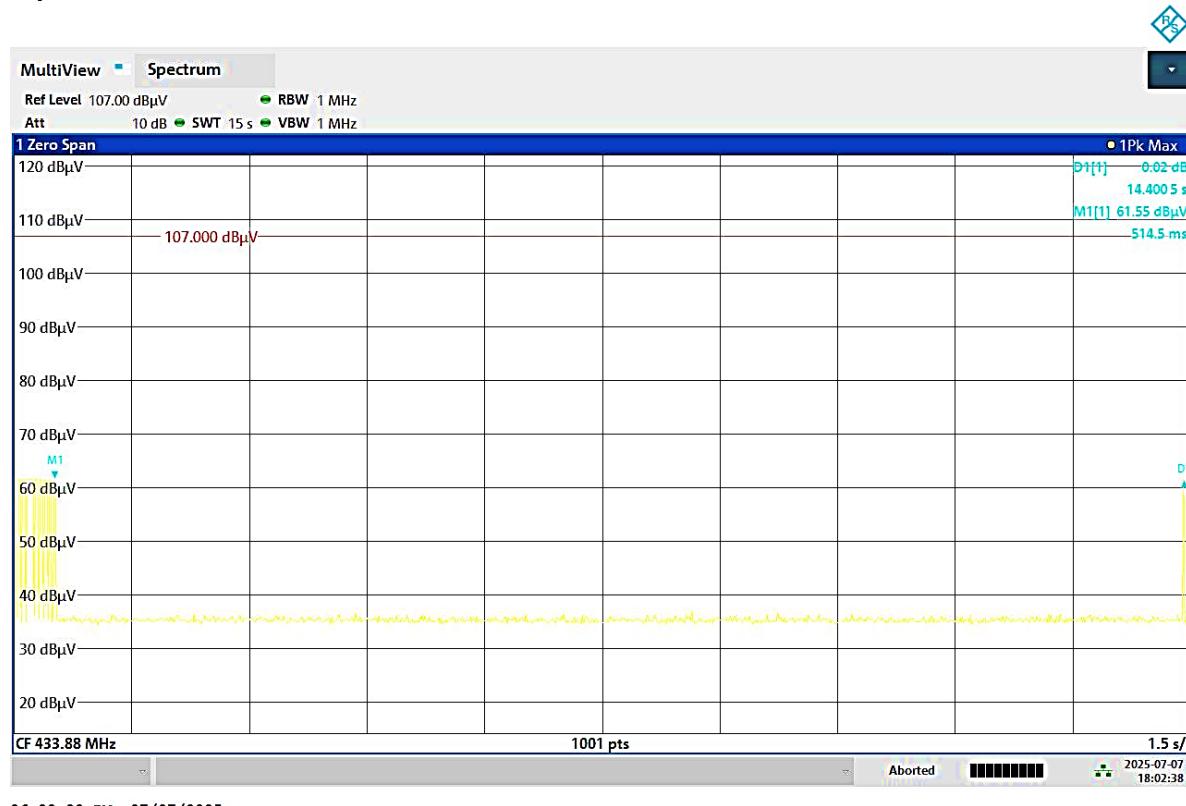
6.3.5 E.U.T. Operation

Operating Environment:

Temperature: 28.8 °C Humidity: 58.6 % RH Atmospheric Pressure : N/A mbar
 Test Mode: Module continuously transmitted
 Operating Frequency: 433.92MHz

6.3.6 Measurement Data

Silent period between transmission



Test item	Measurement	Limit (s)	Result
Silent period between transmission	14.40s	≥10s	Pass

Duration of each transmission



Test item	Measurement	Limit (s)	Result
Duration of each transmission	10.00ms	≤1s	Pass

6.4 Field Strength of the Fundamental Signal

Test Requirement: FCC Part 15 Subpart C §15.231 (e)

Test Method: ANSI C63.10:2013 Section 6.5

Limit:

Fundamental frequency (MHz)	Field strength of fundamental (microvolts/meter)	Field strength of spurious emission (microvolts/meter)
40.66-40.70	1,000	100
70-130	500	50
130-174	500 to 1,500 ¹	50 to 150 ¹
174-260	1,500	150
260-470	1,500 to 5,000 ¹	150 to 500 ¹
Above 470	5,000	500

¹ Linear interpolations.

[Where F is the frequency in MHz, the formulas for calculating the maximum permitted fundamental field strengths are as follows:

for the band 130-174 MHz, uV/m at 3 meters = 56.81818(F) - 6136.3636;

for the band 260-470 MHz, uV/m at 3 meters = 41.6667(F) - 7083.3333.

The maximum permitted unwanted emission level is 20 dB below the maximum permitted fundamental level.]

The fundamental frequency of the EUT is 315MHz and 433.92 MHz.

The effective limit for 433.92MHz = 72.87 dB μ V/m (Average), 92.87 dB μ V/m (Peak),

The effective limit for 315MHz = 67.66 dB μ V/m (Average), 87.66 dB μ V/m (Peak),

No fundamental is allowed in the restricted bands.

6.4.1 E.U.T. Operation

Operating Environment:

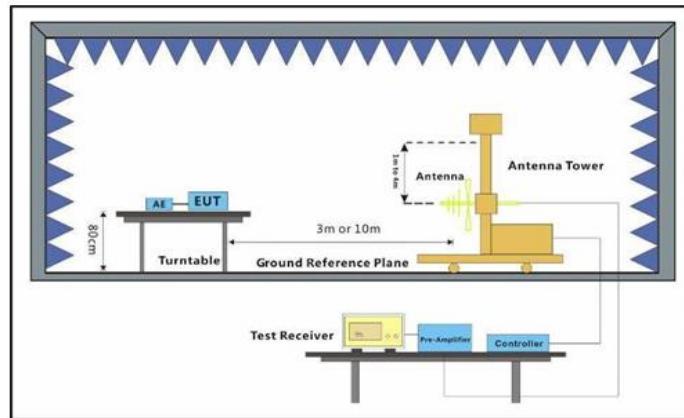
Temperature: 28.7 °C Humidity: 58.7 % RH Atmospheric Pressure : N/A mbar

Test Mode: Module continuously transmitted

Operating Frequency: 315MHz

6.4.2 Test Setup Diagram

Refer to Setup Photographs.



6.4.3 Measurement Method

1. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
2. The antenna height is from 1 to 4 meter above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
3. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to horizontal and vertical and rotate the EUT from 0 degrees to 360 degrees to find the maximum reading.
4. Repeat above procedures until all frequencies measured was complete.

6.4.4 Measurement Data

An initial pre-scan was performed onsite using the spectrum analyser in peak detection mode. Quasi-peak measurements were conducted based on the peak sweep graph. The EUT was measured by Trilog antenna with 2 orthogonal polarities.

Remark:

- a. If the Peak value below the AV Limit, the AV test doesn't perform for this submission.
- b. Average level=Peak level-Duty Cycle Factor
- c. $T_{on} = 5 * 10.9\text{ms} = 54.5\text{ms}$
- d. Duty Cycle = $T_{on} / T_{ref} = 54.5\text{ms} / 100\text{ms} = 0.545\text{dB}$
- e. Duty Cycle Factor= $20\log(\text{Duty Cycle}) = -5.27\text{dB}$



Frequency	Level (dBuV/m)	Limit Line (dBuV/m)	Margin (dB)	Detector	Polarization
315MHz	50.01	67.66	17.65	Peak	Horizontal
	65.80	67.66	1.86	Peak	Vertical



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6.4.5 E.U.T. Operation

Operating Environment:

Temperature: 28.7 °C Humidity: 58.7 % RH Atmospheric Pressure : N/A mbar

Test Mode: Module continuously transmitted

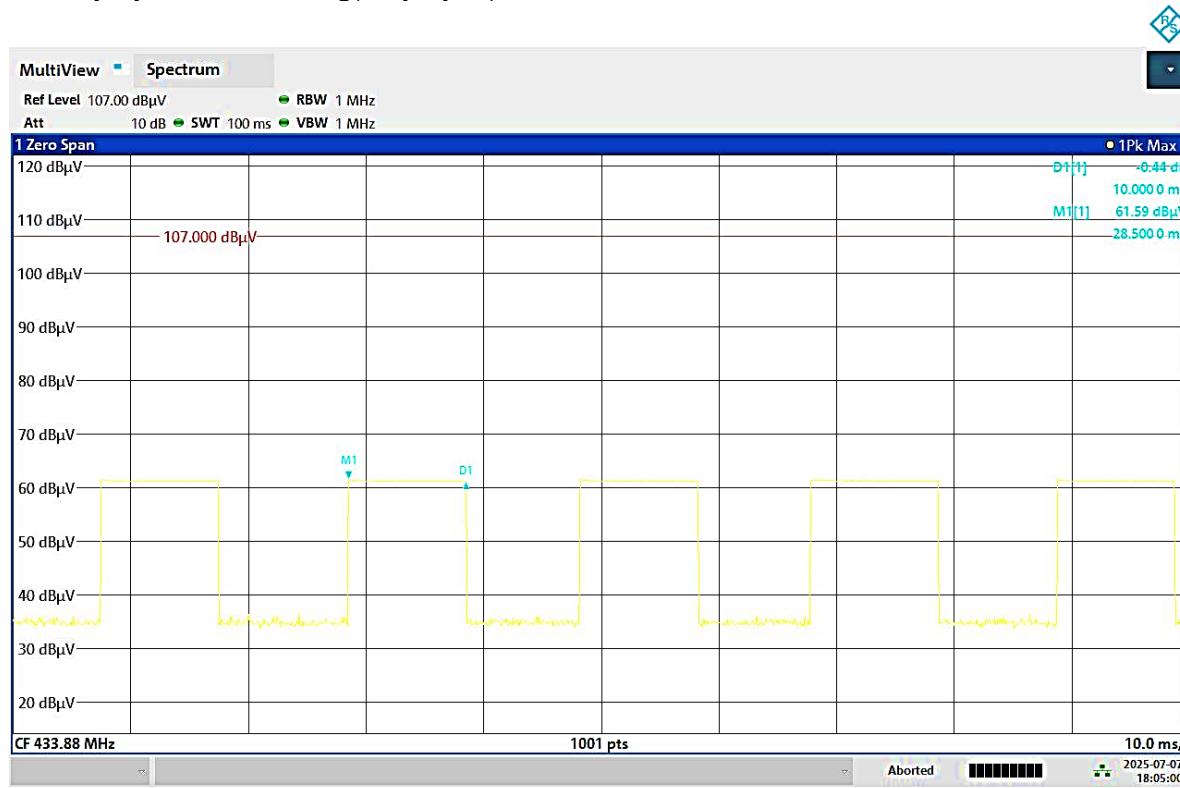
Operating Frequency: 433.92MHz

6.4.6 Measurement Data

An initial pre-scan was performed onsite using the spectrum analyser in peak detection mode. Quasi-peak measurements were conducted based on the peak sweep graph. The EUT was measured by Trilog antenna with 2 orthogonal polarities.

Remark:

- a. If the Peak value below the AV Limit, the AV test doesn't perform for this submission.
- b. Average level=Peak level-Duty Cycle Factor
- c. $T_{on} = 5*10ms = 50ms$
- d. Duty cycle = $T_{on} / T_{ref} = 50ms / 100ms = 0.5dB$
- e. Duty Cycle Factor= $20\log(\text{Duty Cycle}) = -6.02dB$



Frequency	Level (dB _µ V/m)	Limit Line (dB _µ V/m)	Margin (dB)	Detector	Polarization
433.92MHz	31.22	92.87	61.65	Peak	Horizontal
	40.71	92.87	52.16	Peak	Vertical

6.5 Radiated Emission (30MHz – 1GHz)

Test Requirement: FCC Part 15 Subpart C Section 15.209 (a)

Test Method: ANSI C63.10:2013 Section 6.5

Frequency Range: 30MHz – 1GHz

Measurement Distance: 3m

Limit:

Frequency (MHz)	Field strength (microvolts/meter)	Measurement distance (meters)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30.0	30	30
30-88	100 **	3
88-216	150 **	3
216-960	200 **	3
Above 960	500	3

6.5.1 E.U.T. Operation

Operating Environment:

Temperature: 25.1 °C Humidity: 51.3 % RH Atmospheric Pressure : N/A mbar

Test Mode: Module continuously transmitted

Operating Frequency: 315MHz

6.5.2 Measurement Method

1. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
2. The antenna height is one meter above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
3. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to horizontal or vertical (for the test frequency of below 30MHz, the antenna was tuned to heights 4 meter) and rotate the EUT from 0 degrees to 360 degrees to find the maximum reading.
4. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
5. Repeat above procedures until all frequencies measured was complete.

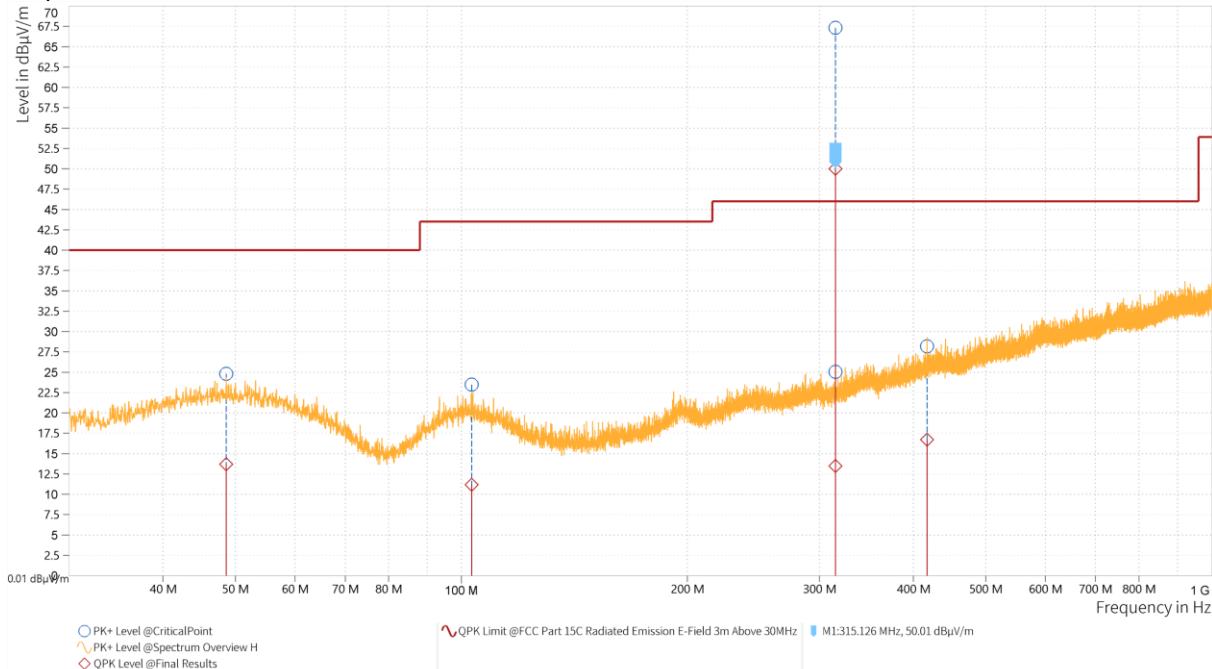
6.5.3 Measurement Data

An initial pre-scan was performed onsite using the spectrum analyser in peak detection mode. Quasi-peak measurements were conducted based on the peak sweep graph. The EUT was measured by Trilog antenna with 2 orthogonal polarities.

Remark:

- a. For radiated emission test: Correction Factor = Antenna Factor + Cable Loss.
- b. For conducted emission test: Correction Factor = LISN Factor + Cable Loss.
- c. Margin = Limit – Reading
- d. Pol = Polarization

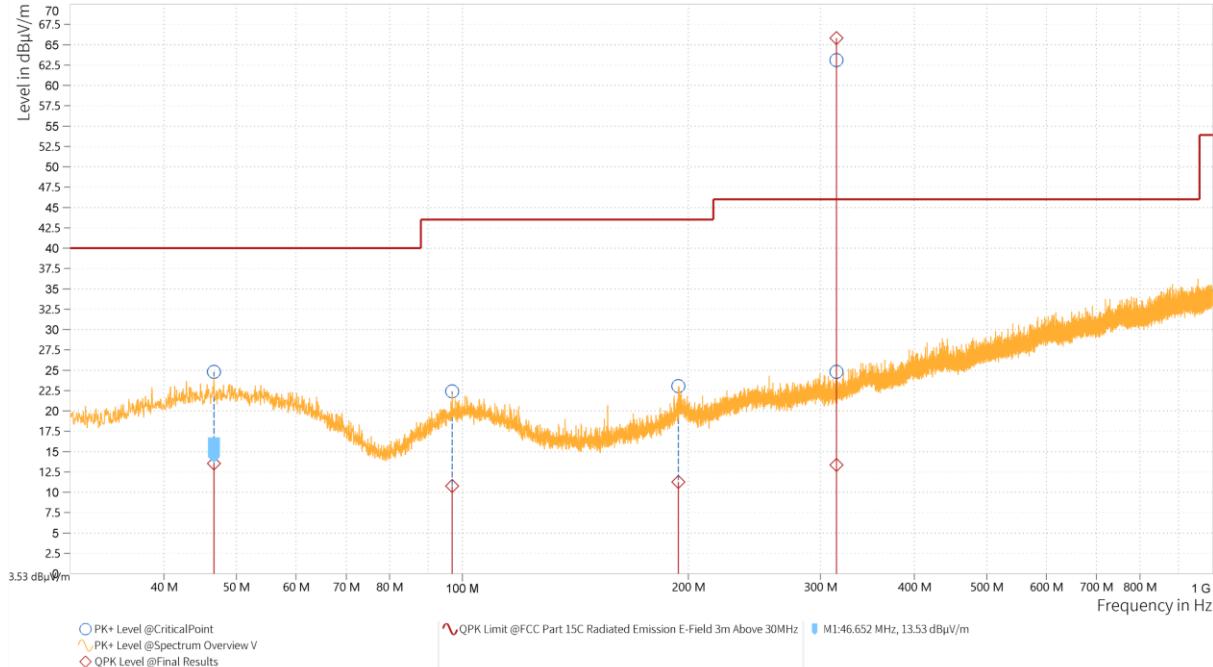
Polarization: Horizontal
Quasi-peak measurement:



Horizontal Spectrum Overview

Frequency [MHz]	QPK Level [dBμV/m]	QPK Limit [dBμV/m]	QPK Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]	Meas. BW [kHz]	Remarks
48.592	13.70	40.00	26.30	14.75	H	379.1	2.087	120.000	N/A
103.181	11.18	43.50	32.32	12.90	H	368.9	1	120.000	N/A
315.126	50.01	46.00	-4.01	14.70	H	317.8	1.985	120.000	Operating Frequency
417.353	16.70	46.00	29.30	17.62	H	232.7	3.875	120.000	N/A

Polarization: Vertical
Quasi-peak measurement:



Vertical Spectrum Overview

Frequency [MHz]	QPK Level [dBµV/m]	QPK Limit [dBµV/m]	QPK Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]	Meas. BW [kHz]	Remarks
46.652	13.53	40.00	26.47	14.62	V	173.2	3.109	120.000	N/A
96.930	10.76	43.50	32.74	12.44	V	100.1	3.998	120.000	N/A
194.038	11.25	43.50	32.25	12.45	V	367.1	3.875	120.000	N/A
315.018	65.80	46.00	-19.80	14.69	V	240.1	2.109	120.000	Operating Frequency

6.5.4 E.U.T. Operation

Operating Environment:

Temperature: 25.1 °C Humidity: 54.5 % RH Atmospheric Pressure : N/A mbar

Test Mode: Module continuously transmitted

Operating Frequency: 433.92MHz

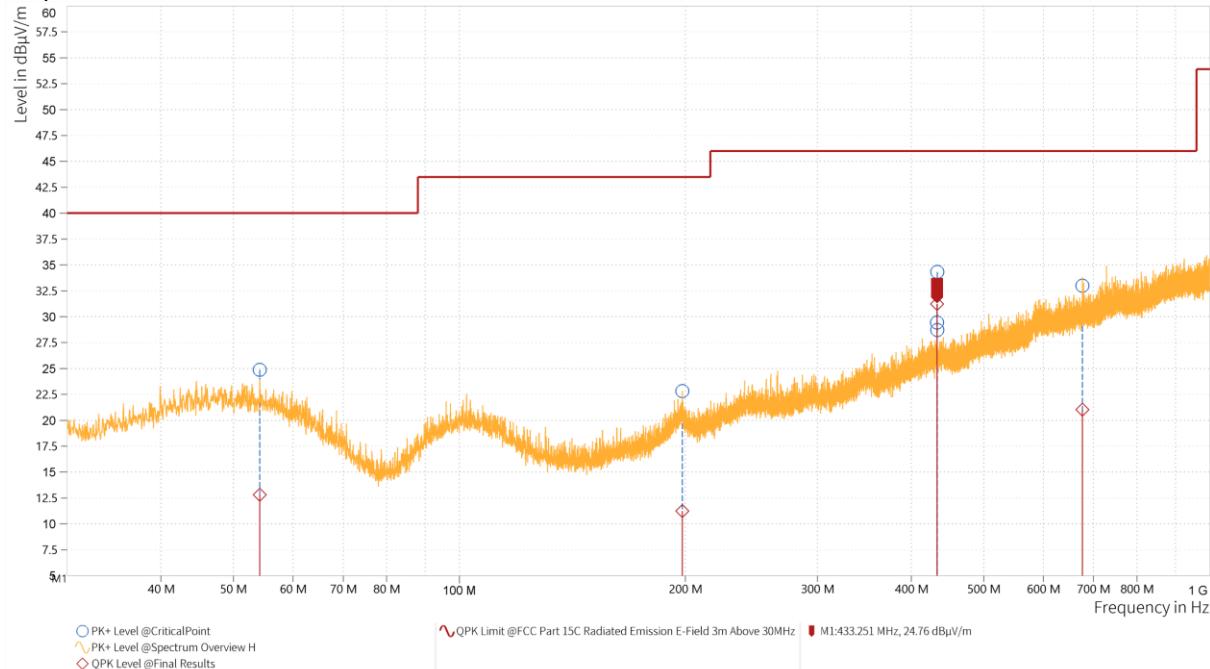
6.5.5 Measurement Data

An initial pre-scan was performed onsite using the spectrum analyser in peak detection mode. Quasi-peak measurements were conducted based on the peak sweep graph. The EUT was measured by Trilog antenna with 2 orthogonal polarities.

Remark:

- a. For radiated emission test: Correction Factor = Antenna Factor + Cable Loss.
- b. For conducted emission test: Correction Factor = LISN Factor + Cable Loss.
- c. Margin = Limit – Reading
- d. Pol = Polarization

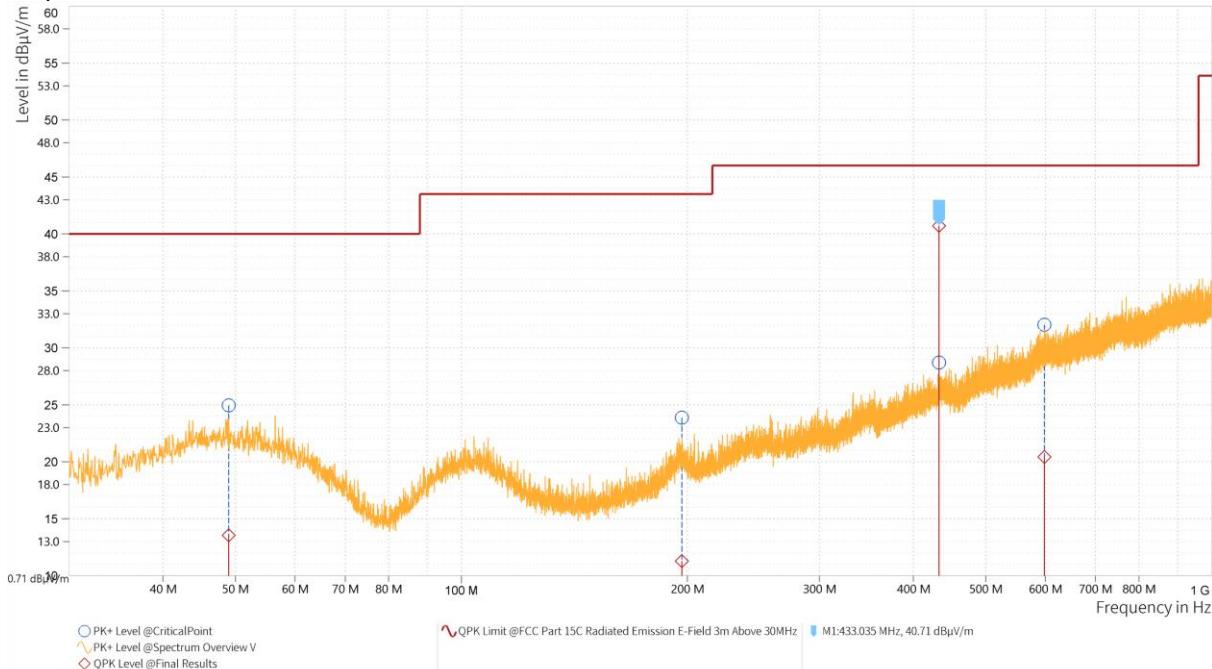
Polarization: Horizontal
Quasi-peak measurement:



Horizontal Spectrum Overview

Frequency [MHz]	QPK Level [dBμV/m]	QPK Limit [dBμV/m]	QPK Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]	Meas. BW [kHz]	Remarks
54.196	12.81	40.00	27.19	14.44	H	372.8	1.987	120.000	N/A
198.187	11.23	43.50	32.27	12.62	H	35.3	1.122	120.000	N/A
433.035	31.22	46.00	14.78	17.91	H	176.1	2.059	120.000	Operating Frequency
676.505	21.03	46.00	24.97	21.36	H	130.6	2.084	120.000	N/A

Polarization: Vertical
Quasi-peak measurement:



Vertical Spectrum Overview

Frequency [MHz]	QPK Level [dBμV/m]	QPK Limit [dBμV/m]	QPK Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]	Meas. BW [kHz]	Remarks
48.969	13.53	40.00	26.47	14.76	V	215.6	3.059	120.000	N/A
196.732	11.27	43.50	32.23	12.77	V	152	4	120.000	N/A
433.035	40.71	46.00	5.29	17.91	V	176.1	1.125	120.000	Operating Frequency
598.204	20.41	46.00	25.59	21.06	V	153.1	3.061	120.000	N/A

6.6 Radiated Emissions (1GHz-6GHz)

Test Requirement: FCC Part 15 Subpart C Section 15.209 (a)

Test Method: ANSI C63.10:2013 Section 6.6

Frequency Range: 1GHz – 6GHz

Measurement Distance: 3m

Limit

Frequency (MHz)	Field strength (microvolts/meter)	Measurement distance (meters)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30.0	30	30
30-88	100 **	3
88-216	150 **	3
216-960	200 **	3
Above 960	500	3

6.6.1 E.U.T. Operation

Operating Environment:

Temperature: 23.9 °C Humidity: 58.1 % RH Atmospheric Pressure : N/A mbar

Test Mode: Module continuously transmitted

Operating Frequency: 315MHz

6.6.2 Measurement Method

1. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
2. The antenna height is one meter above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
3. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to horizontal or vertical (for the test frequency of below 30MHz, the antenna was tuned to heights 4 meter) and rotate the EUT from 0 degrees to 360 degrees to find the maximum reading.
4. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
5. Repeat above procedures until all frequencies measured was complete.

6.6.3 Measurement Data

An initial pre-scan was performed onsite using the spectrum analyser in peak detection mode. Average measurements were conducted based on the peak sweep graph. The EUT was measured by Horn antenna with 2 orthogonal polarities.

Remark:

- a. For radiated emission test: Correction Factor = Antenna Factor + Cable Loss.
- b. For conducted emission test: Correction Factor = LISN Factor + Cable Loss.
- c. Margin = Limit – Reading
- d. Pol = Polarization

Polarization: Horizontal
Quasi-peak measurement:



Horizontal Spectrum Overview

Frequency [MHz]	PK+ Level [dBμV/m]	PK+ Limit [dBμV/m]	PK+ Margin [dB]	AVG Level [dBμV/m]	AVG Limit [dBμV/m]	AVG Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]	Meas. BW [kHz]
1,045.000	32.04	53.90	21.86	19.91	73.90	53.99	-16.04	H	76.1	3.993	1,000.000
2,454.000	34.93	53.90	18.97	22.35	73.90	51.55	-10.69	H	292.7	4	1,000.000
5,032.500	39.26	53.90	14.64	27.02	73.90	46.88	-3.32	H	374.1	4	1,000.000

Polarization: Vertical
Quasi-peak measurement:



Vertical Spectrum Overview

Frequency [MHz]	PK+ Level [dBμV/m]	PK+ Limit [dBμV/m]	PK+ Margin [dB]	AVG Level [dBμV/m]	AVG Limit [dBμV/m]	AVG Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]	Meas. BW [kHz]
1,016.000	32.47	53.90	21.43	20.14	73.90	53.76	-15.84	V	353.8	3.963	1,000.000
2,262.000	33.45	53.90	20.45	21.57	73.90	52.33	-11.14	V	95.2	3.023	1,000.000
5,165.500	39.32	53.90	14.58	26.87	73.90	47.03	-3.26	V	31.1	3.979	1,000.000

6.6.4 E.U.T. Operation

Operating Environment:

Temperature: 23.4 °C Humidity: 60.7 % RH Atmospheric Pressure : N/A mbar

Test Mode: Module continuously transmitted

Operating Frequency: 433.92MHz

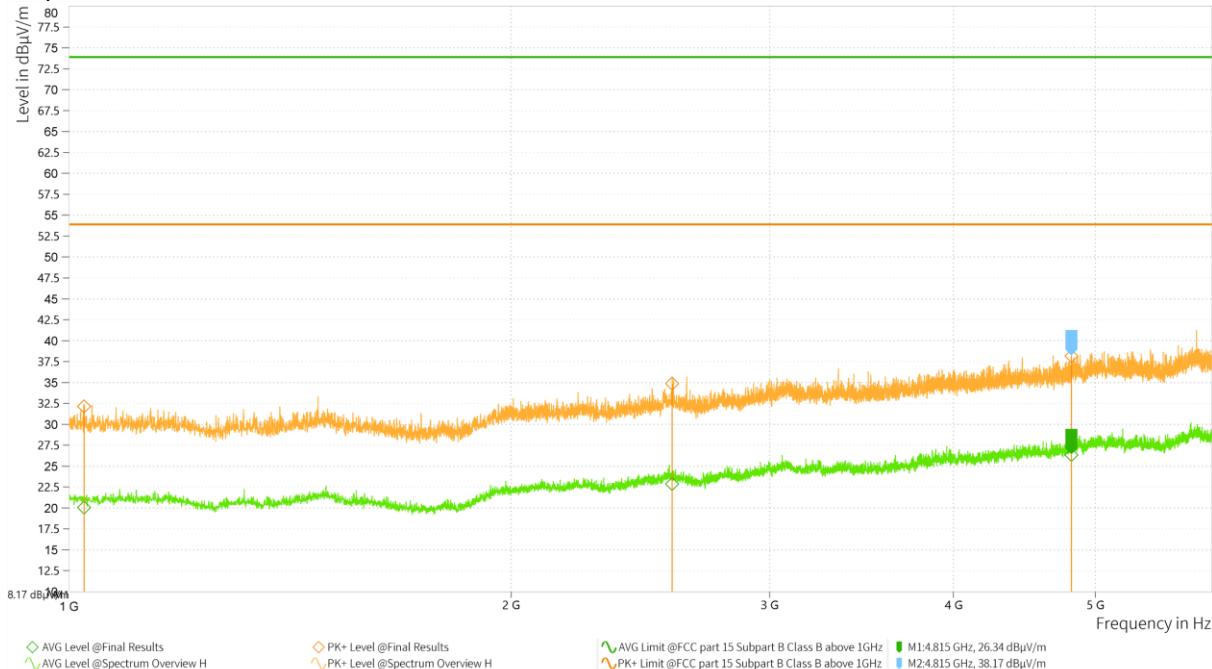
6.6.5 Measurement Data

An initial pre-scan was performed onsite using the spectrum analyser in peak detection mode. Average measurements were conducted based on the peak sweep graph. The EUT was measured by Horn antenna with 2 orthogonal polarities.

Remark:

- a. For radiated emission test: Correction Factor = Antenna Factor + Cable Loss.
- b. For conducted emission test: Correction Factor = LISN Factor + Cable Loss.
- c. Margin = Limit – Reading
- d. Pol = Polarization

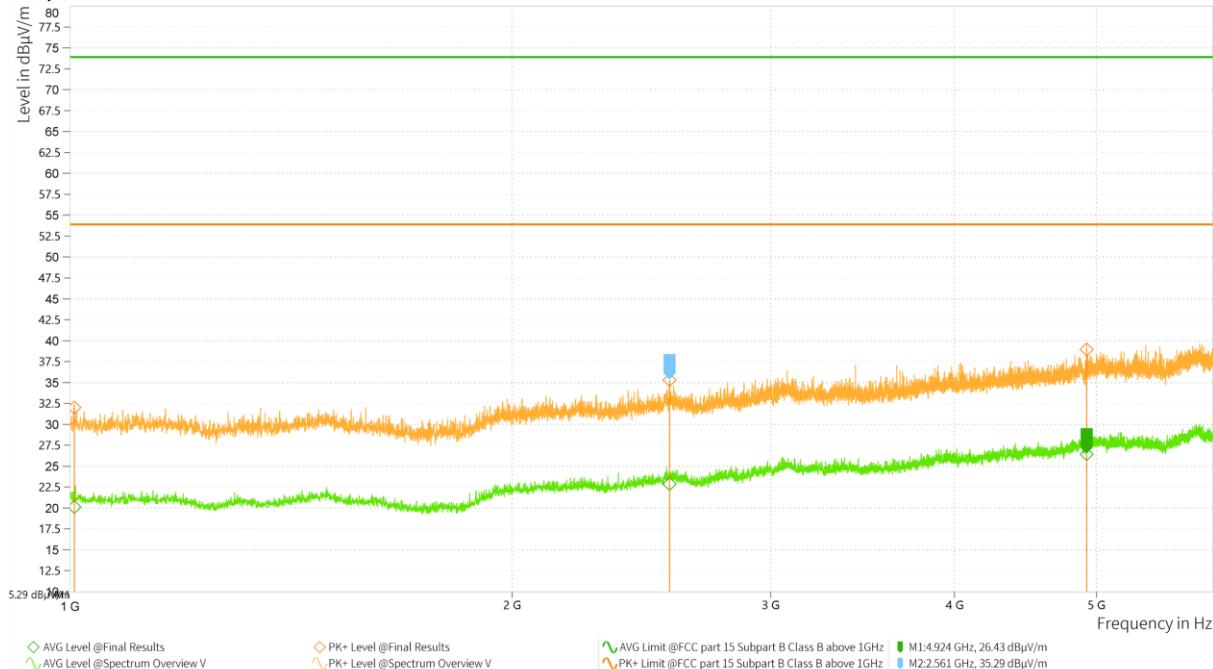
Polarization: Horizontal
Quasi-peak measurement:



Horizontal Spectrum Overview

Frequency [MHz]	PK+ Level [dBμV/m]	PK+ Limit [dBμV/m]	PK+ Margin [dB]	AVG Level [dBμV/m]	AVG Limit [dBμV/m]	AVG Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]	Meas. BW [kHz]
1,024.000	32.13	53.90	21.77	20.06	73.90	53.84	-15.89	H	305.4	3.963	1,000.000
2,574.500	34.86	53.90	19.04	22.88	73.90	51.02	-10.15	H	346.5	3.993	1,000.000
4,814.500	38.17	53.90	15.73	26.34	73.90	47.56	-4.52	H	187	3.977	1,000.000

Polarization: Vertical
Quasi-peak measurement:



Vertical Spectrum Overview

Frequency [MHz]	PK+ Level [dBμV/m]	PK+ Limit [dBμV/m]	PK+ Margin [dB]	AVG Level [dBμV/m]	AVG Limit [dBμV/m]	AVG Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]	Meas. BW [kHz]
1,006.500	31.99	53.90	21.91	20.11	73.90	53.79	-15.77	V	222	2.879	1,000.000
2,560.500	35.29	53.90	18.61	22.86	73.90	51.04	-10.13	V	378.2	3.999	1,000.000
4,924.000	38.94	53.90	14.96	26.43	73.90	47.47	-3.84	V	347.9	1.125	1,000.000

6.7 99% bandwidth

Test Requirement: FCC Part 15 Subpart C

Test Method: ANSI C63.10:2013

6.7.1 E.U.T. Operation

Operating Environment:

Temperature: 23.4 °C Humidity: 60.7 % RH Atmospheric Pressure : N/A mbar

Test Mode: Module continuously transmitted

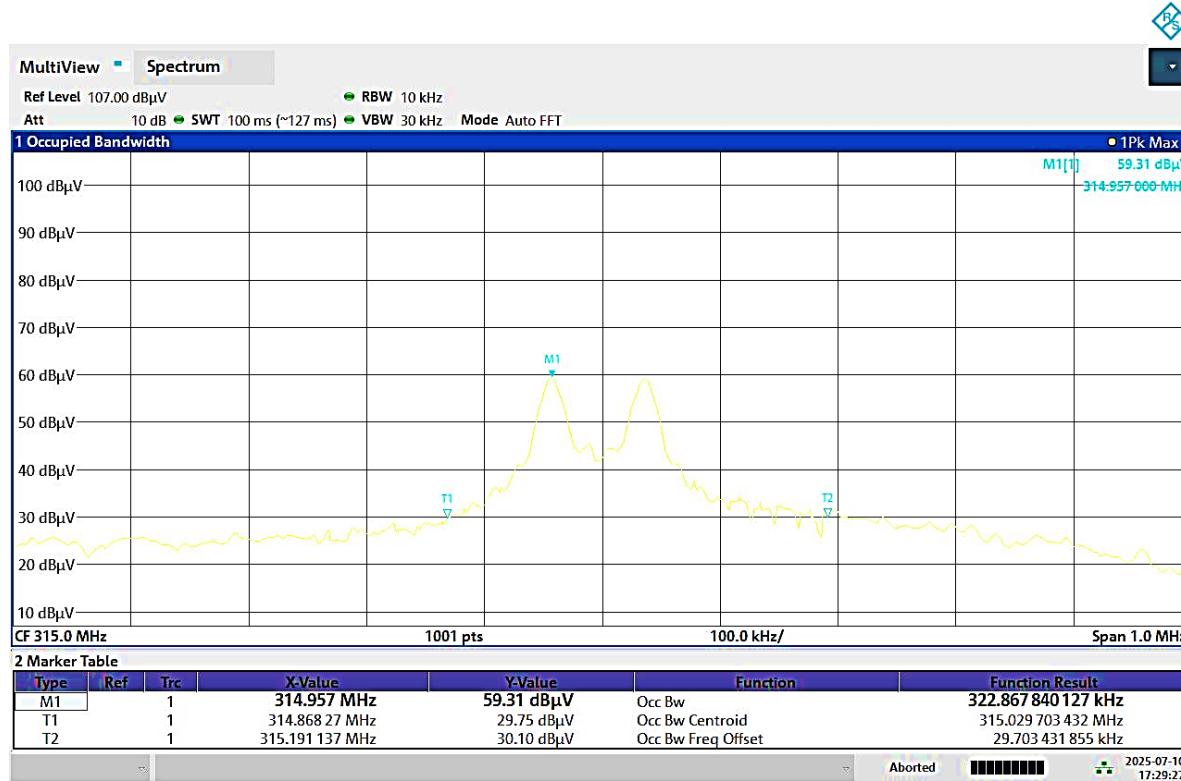
Operating Frequency: 315MHz

6.7.2 Measurement Method

The occupied bandwidth or the “99% emission bandwidth” is defined as the frequency range between two points, one above and the other below the carrier frequency, within which 99% of the total transmitted power of the fundamental transmitted emission is contained.

6.7.3 Measurement Data

99% Bandwidth	FL	FH	Result
314.967MHz	314.87MHz	315.19MHz	Pass



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6.7.4 E.U.T. Operation

Operating Environment:

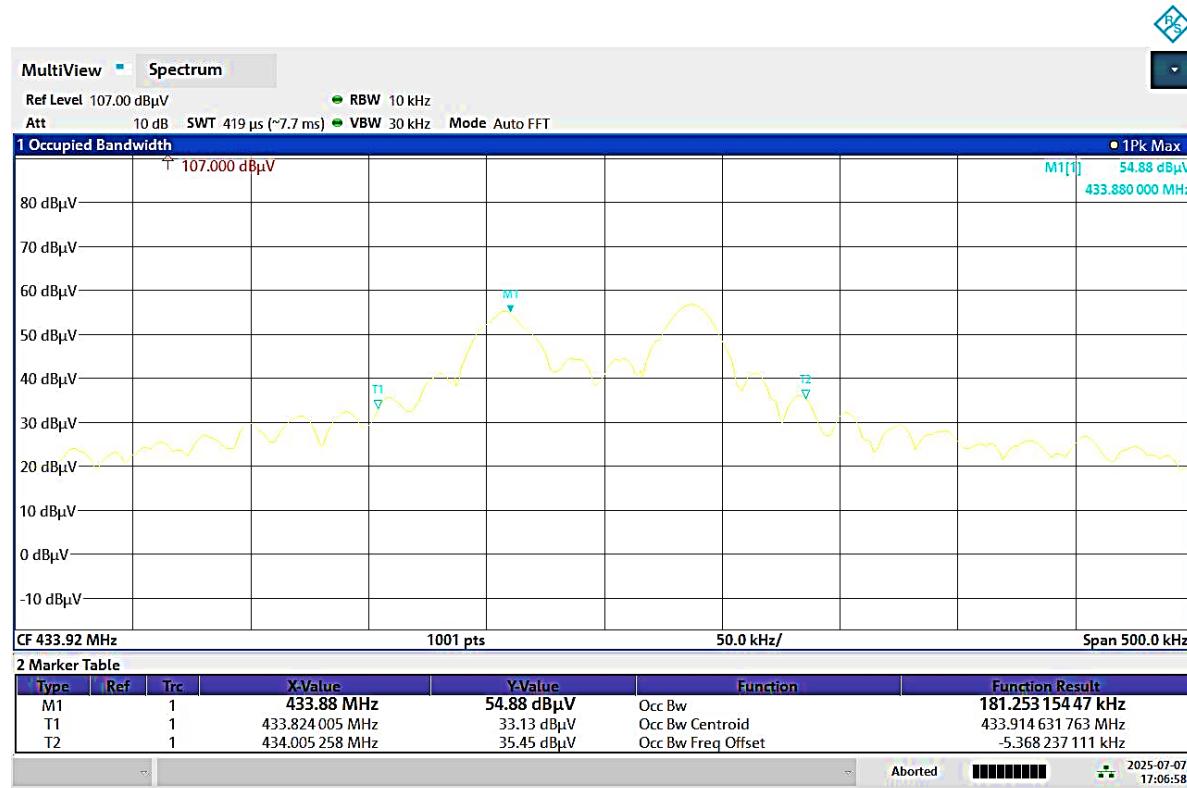
Temperature: 23.4 °C Humidity: 60.7 % RH Atmospheric Pressure : N/A mbar
Test Mode: Module continuously transmitted
Operating Frequency: 433.92MHz

6.7.5 Measurement Method

The occupied bandwidth or the “99% emission bandwidth” is defined as the frequency range between two points, one above and the other below the carrier frequency, within which 99% of the total transmitted power of the fundamental transmitted emission is contained.

6.7.6 Measurement Data

99% Bandwidth	FL	FH	Result
433.88MHz	433.82MHz	434.00MHz	Pass



- - End of Test Report - - -