



RF MEASUREMENT REPORT

FCC ID: 2A82LSPOT-V1
Applicant: Nova Labs, Inc.
Product: Spot Mapper
Model No.: Spot-US
Brand Name: Helium
FCC Classification: Digital Transmission System (DTS)
FCC Rule Part(s): Part 15 Subpart C (Section 15.247)
Result: Complies
Test Date: 2022-10-24 ~ 2022-10-25

Reviewed By:

Sunny Sun

Approved By:

Robin Wu



The test results relate only to the samples tested.

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 C63.10-2013. 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 (Suzhou) Co., Ltd.

Revision History

Report No.	Version	Description	Issue Date	Note
2209RSU059-U3	Rev. 01	Initial Report	2023-01-04	Invalid
2209RSU059-U3	Rev. 02	Modify the Product Name	2023-01-06	Valid

CONTENTS

Description	Page
1. General Information	5
1.1. Applicant	5
1.2. Manufacturer	5
1.3. Testing Facility	5
1.4. Product Information.....	6
1.5. Radio Specification under Test	7
1.6. Working Frequencies	7
2. Test Configuration	8
2.1. Test System Connection Diagram.....	8
2.2. Test Software	9
2.3. Applied Standards.....	9
2.4. Test Environment Condition	9
3. Antenna Requirements	10
4. Measuring Instrument	11
5. Decision Rules and Measurement Uncertainty	12
5.1. Decision Rules	12
5.2. Measurement Uncertainty	12
6. Test Result.....	13
6.1. Summary	13
6.2. Output Power Measurement	14
6.2.1. Test Limit	14
6.2.2. Test Procedure	14
6.2.3. Test Setting	14
6.2.4. Test Setup	14
6.2.5. Test Result	14
6.3. Radiated Spurious Emission Measurement.....	15
6.3.1. Test Limit	15
6.3.2. Test Procedure	15
6.3.3. Test Setting	15
6.3.4. Test Setup	17
6.3.5. Test Result	18
Appendix A - Test Result.....	19
A.1 Output Power Test Result	19
A.2 Radiated Spurious Emission Test Result	20

Appendix B - Test Setup Photograph	27
Appendix C - EUT Photograph	28

1. General Information

1.1. Applicant

Nova Labs, Inc.

2202 South Figueroa #408, Los Angeles, California, United States

1.2. Manufacturer

Nova Labs, Inc.

2202 South Figueroa #408, Los Angeles, California, United States

1.3. Testing Facility

<input checked="" type="checkbox"/>	Test Site – MRT Suzhou Laboratory Laboratory Location (Suzhou - Wuzhong) D8 Building, No.2 Tian’edang Rd., Wuzhong Economic Development Zone, Suzhou, China Laboratory Location (Suzhou - SIP) 4b Building, Liando U Valley, No.200 Xingpu Rd., Shengpu Town, Suzhou Industrial Park, China Laboratory Accreditations A2LA: 3628.01 CNAS: L10551 FCC: CN1166 ISED: CN0001 VCCI: <input type="checkbox"/> R-20025 <input type="checkbox"/> G-20034 <input type="checkbox"/> C-20020 <input type="checkbox"/> T-20020 <input type="checkbox"/> R-20141 <input type="checkbox"/> G-20134 <input type="checkbox"/> C-20103 <input type="checkbox"/> T-20104
<input type="checkbox"/>	Test Site – MRT Shenzhen Laboratory Laboratory Location (Shenzhen) 1G, Building A, Junxiangda Building, Zhongshanyuan Road West, Nanshan District, Shenzhen, China Laboratory Accreditations A2LA: 3628.02 CNAS: L10551 FCC: CN1284 ISED: CN0105
<input type="checkbox"/>	Test Site – MRT Taiwan Laboratory Laboratory Location (Taiwan) No. 38, Fuxing 2nd Rd., Guishan Dist., Taoyuan City 333, Taiwan (R.O.C.) Laboratory Accreditations TAF: L3261-190725 FCC: 291082, TW3261 ISED: TW3261

1.4. Product Information

Product Name	Spot Mapper
Model No.	Spot-US
Brand Name	Helium
Test Serial No.	20220926Sample#08
E-UTRA Band	FDD Band: 2, 4, 5, 66, 71 TDD Band: 48
NR Band	TDD Band: n41, n48
Wi-Fi Specification	802.11 b/g/n/ac/ax
Bluetooth Specification	V5.1 dual mode
Lora Specification	902 ~ 928 MHz
Operating Temperature	-20 ~ 55 °C
Integrated WWAN Modular Information	
Model No.	RM505Q-AE
FCC ID	XMR2020RM505QAE
Brand Name	Quectel
Integrated BT & Wi-Fi Modular Information	
Model No.	FG50V
FCC ID	XMR202103FG50V
Brand Name	Quectel
Integrated Lora Modular Information	
Model No.	LoRa-E5-HF
FCC ID	Z4T-LORA-E5
Brand Name	Seeed
Accessories	
Rechargeable Li-ion Battery	Model No.: QDM044 Rated Voltage: 3.8V Rated Capacity: 4000mAh/15.2Wh Limited Charge Voltage: 4.35V
Remark:	
<ol style="list-style-type: none"> The information of EUT was provided by the manufacturer, and the accuracy of the information shall be the responsibility of the manufacturer. This device is based on certification module, FCC ID “Z4T-LORA-E5” to assessing the output power, radiated spurious emission. 	

1.5. Radio Specification under Test

LoRa Frequency	902 ~ 928MHz
Channel Number	8
Antenna Information	PIFA Antenna, 3.91dBi

1.6. Working Frequencies

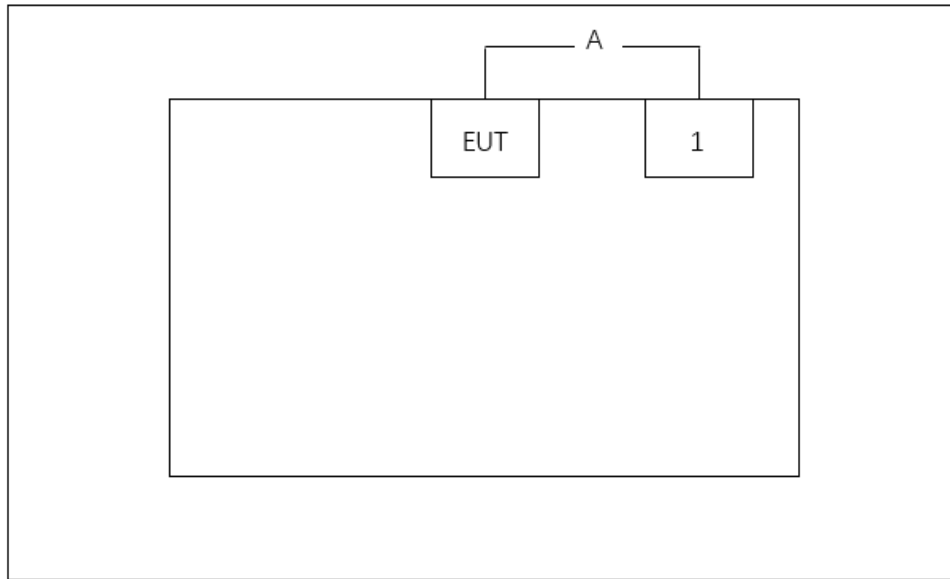
Channel	Frequency	Channel	Frequency	Channel	Frequency
00	903.0 MHz	01	904.6 MHz	02	906.2 MHz
03	907.8 MHz	04	909.4 MHz	05	911.0 MHz
06	912.6 MHz	07	914.2 MHz	--	--

2. Test Configuration

2.1. Test System Connection Diagram

The device was tested per the guidance ANSI C63.10: 2013 was used to reference the appropriate EUT setup for radiated emissions testing.

Connection Diagram – Radiated Emission testing



Cable Type		Cable Description	
A	USB Cable	Shielded, 1.5m	
Product		Manufacturer	Model No.
1	Notebook	Lenovo	E431

2.2. Test Software

The test utility software used during testing was “adb_tool”, and commands were provided by manufacturer.

2.3. Applied Standards

According to the specifications of the manufacturer, the EUT must comply with the requirements of the following standards:

- FCC Part 15.247
- KDB 558074 D01v05r02
- ANSI C63.10-2013

2.4. Test Environment Condition

Ambient Temperature	15 ~ 35°C
Relative Humidity	20 ~ 75%RH

3. 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 device is **permanently attached**.
- There are no provisions for connection to an external antenna.

Conclusion:

The unit complies with the requirement of §15.203.

4. Measuring Instrument

Instrument	Manufacturer	Model No.	Asset No.	Cali. Interval	Cali. Due Date	Test Site
EMI Test Receiver	R&S	ESR7	MRTSUE06001	1 year	2022-12-29	WZ-AC1
Horn Antenna	Schwarzbeck	BBHA 9120D	MRTSUE06023	1 year	2023-08-22	WZ-AC1
Preamplifier	Agilent	83017A	MRTSUE06076	1 year	2023-05-08	WZ-AC1
TRILOG Antenna	Schwarzbeck	VULB 9168	MRTSUE06172	1 year	2023-06-21	WZ-AC1
Anechoic Chamber	TDK	WZ-AC1	MRTSUE06212	1 year	2023-04-21	WZ-AC1
Thermohygrometer	testo	608-H1	MRTSUE06403	1 year	2023-06-06	WZ-AC1
Signal Analyzer	Keysight	N9010B	MRTSUE06607	1 year	2022-12-29	WZ-AC1
Thermohygrometer	testo	608-H1	MRTSUE11039	1 year	2022-11-11	WZ-AC1
Horn Antenna	Schwarzbeck	BBHA 9170	MRTSUE06597	1 year	2022-12-01	WZ-AC1
Preamplifier	EMCI	EMC184045SE	MRTSUE06640	1 year	2023-01-13	WZ-AC1
Thermohygrometer	testo	608-H1	MRTSUE06402	1 year	2023-06-06	WZ-SR5
Shielding Room	HUAMING	WZ-SR5	MRTSUE06442	N/A	N/A	WZ-SR5
USB Power Sensor	Keysight	U2021XA	MRTSUE06446	1 year	2023-06-04	WZ-SR5
Signal Analyzer	Keysight	N9010B	MRTSUE06457	1 year	2023-06-04	WZ-SR5

Software	Version	Function
EMI Software	V3.0.0	EMI Test Software
Controller_MF 7802	2.03C	RE Antenna & Turntable

5. Decision Rules and Measurement Uncertainty

5.1. Decision Rules

The Decision Rule is based on Simple Acceptance in accordance with ISO Guide 98-4: 2012 Clause 8.2.
(Measurement uncertainty is not taken into account when stating conformity with a specified requirement.)

5.2. 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 $k = 2$.

Radiated Disturbance	
The maximum measurement uncertainty is evaluated as:	
Horizontal:	30MHz~200MHz: 3.85dB
	200MHz~1GHz: 4.36dB
	1GHz~25GHz: 4.98dB
Vertical:	30MHz~200MHz: 4.06dB
	200MHz~1GHz: 5.28dB
	1GHz~25GHz: 4.91dB
Output Power	
Measuring Uncertainty for a Level of Confidence of 95% ($U=2U_c(y)$):	
2.30dB	

6. Test Result

6.1. Summary

FCC Section(s)	Test Description	Test Condition	Verdict
15.247(b)(1)	Peak Transmitter Output Power	Conducted	Pass
15.205 15.209	General Field Strength (Restricted Bands and Radiated Emission)	Radiated	Pass

Notes:

1. 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.
2. 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.

6.2. Output Power Measurement

6.2.1. Test Limit

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

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

6.2.2. Test Procedure

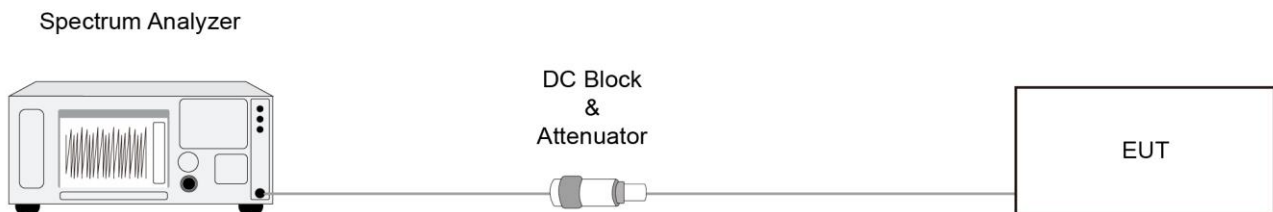
ANSI C63.10-2013 - Section 7.8.5

6.2.3. Test Setting

1. Set RBW \geq the 20 dB bandwidth of the emission being measured.
2. VBW \geq RBW
3. Span = approximately five 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)

6.2.4. Test Setup



6.2.5. Test Result

Refer to Appendix A.1.

6.3. Radiated Spurious Emission Measurement

6.3.1. 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 [uV/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

6.3.2. Test Procedure

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)

6.3.3. Test Setting

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
> 1000MHz	1MHz

Quasi-Peak Measurements below 1GHz

1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest
2. Span was set greater than 1MHz
3. RBW = as specified in Table 1
4. Detector = CISPR quasi-peak
5. Sweep time = auto couple
6. Trace was allowed to stabilize

Peak Measurements above 1GHz

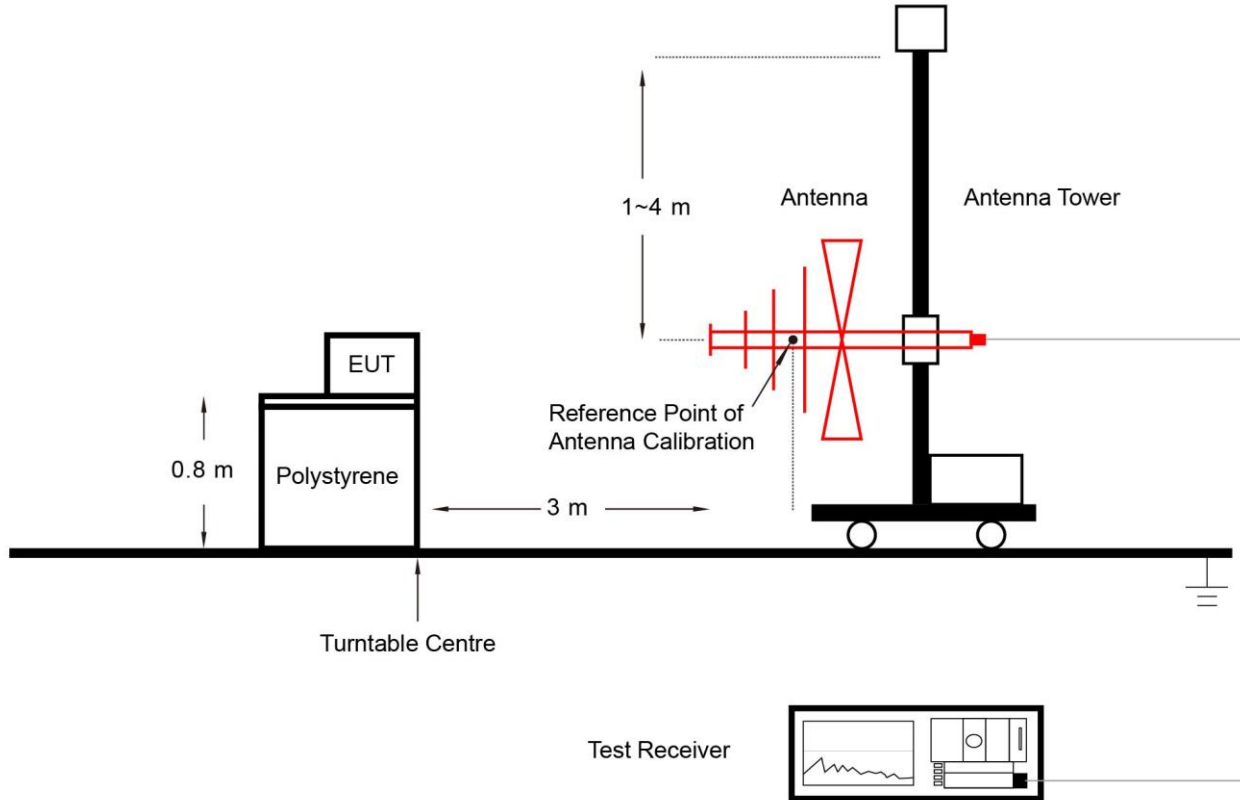
1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest
2. RBW = 1MHz
3. VBW = 3MHz
4. Detector = peak
5. Sweep time = auto couple
6. Trace mode = max hold
7. Trace was allowed to stabilize

Average Measurements above 1GHz (Method VB)

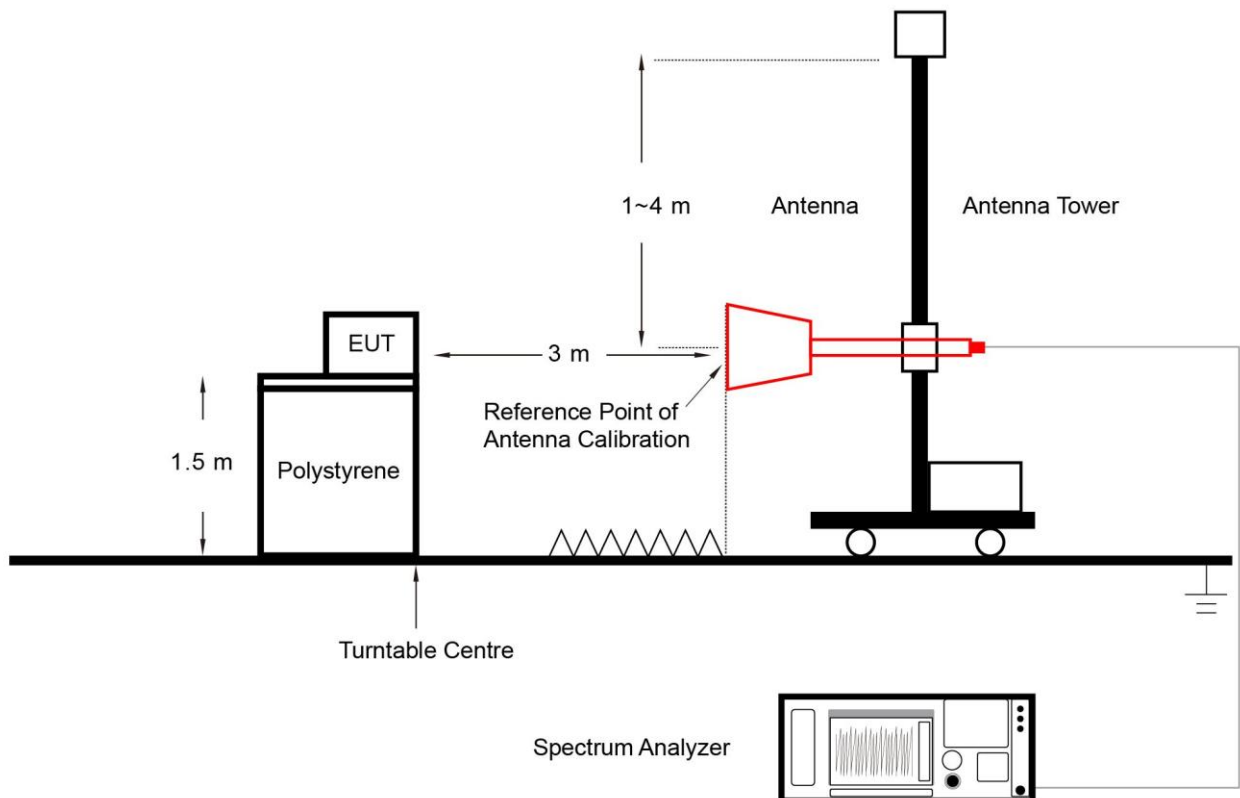
1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest
2. RBW = 1MHz
3. VBW; If the EUT is configured to transmit with duty cycle $\geq 98\%$, set VBW = 10 Hz.
If the EUT duty cycle is $< 98\%$, set VBW $\geq 1/T$. T is the minimum transmission duration.
4. Detector = Peak
5. Sweep time = auto
6. Trace mode = max hold
7. Trace was allowed to stabilize

6.3.4. Test Setup

Below 1GHz Test Setup:



Above 1GHz Test Setup:



6.3.5. Test Result

Refer to Appendix A.2.

Appendix A - Test Result

A.1 Output Power Test Result

Test Site	WZ-SR5	Test Engineer	Lynn Yang
Test Date	2022-10-24		

Channel No.	Frequency (MHz)	Peak Power (dBm)	Limit (dBm)	Result
00	903.0	15.54	≤ 30.00	Pass
03	907.8	15.51	≤ 30.00	Pass
07	914.2	15.43	≤ 30.00	Pass

A.2 Radiated Spurious Emission Test Result

Test Site	WZ-AC1	Test Engineer	Edith Yu
Test Date	2022-10-25		
Remark:	1. Average measurement was not performed if peak level lower than average limit. 2. Other frequency was 20dB below limit line within 1-18GHz, there is not show in the report.		

The Result of Radiated Emission above 1GHz:

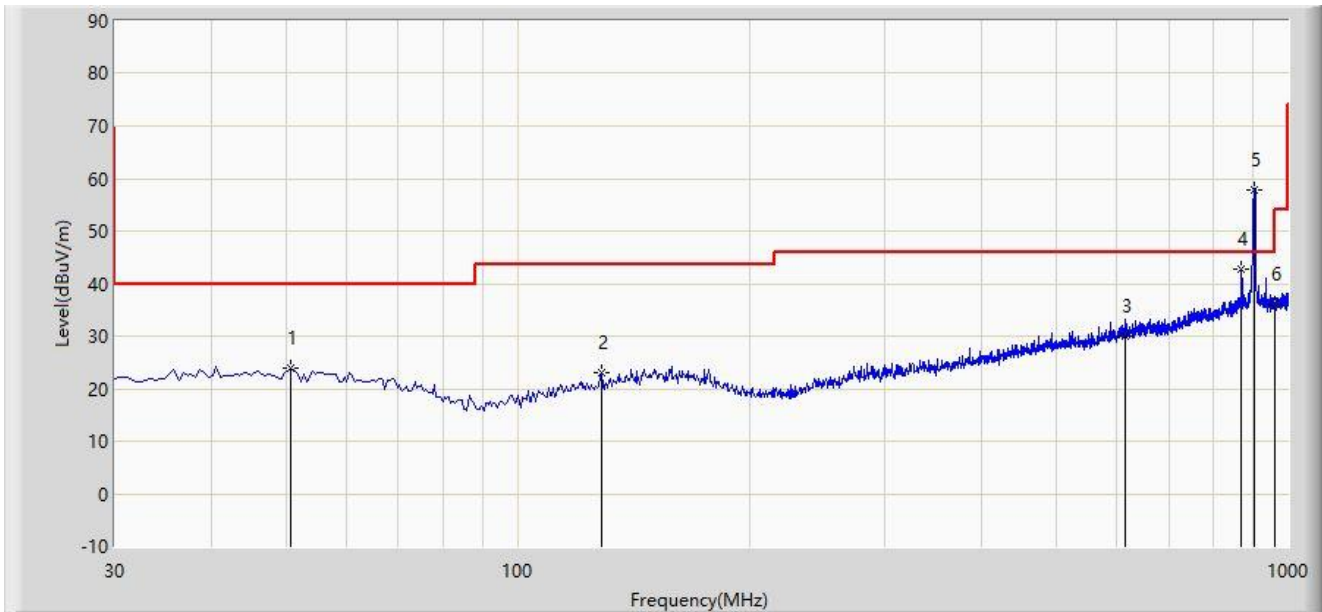
Test Channel	Frequency (MHz)	Reading Level (dBμV)	Factor (dB/m)	Measure Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector	Polarization
00	1567.0	41.8	-6.3	35.5	74.0	-38.5	Peak	Horizontal
	4037.5	37.5	0.7	38.2	74.0	-35.8	Peak	Horizontal
	5419.0	45.2	3.6	48.8	74.0	-25.2	Peak	Horizontal
	1522.0	42.4	-6.2	36.2	74.0	-37.8	Peak	Vertical
	3875.5	37.3	0.4	37.7	74.0	-36.3	Peak	Vertical
	5419.0	45.8	3.6	49.4	74.0	-24.6	Peak	Vertical
03	1517.5	43.1	-6.2	36.9	74.0	-37.1	Peak	Horizontal
	3628.0	41.5	-0.3	41.2	74.0	-32.8	Peak	Horizontal
	5446.0	48.2	3.5	51.7	74.0	-22.3	Peak	Horizontal
	5446.0	46.8	3.5	50.3	54.0	-3.7	Average	Horizontal
	1333.0	43.5	-5.8	37.7	74.0	-36.3	Peak	Vertical
	5446.0	47.4	3.5	50.9	74.0	-23.1	Peak	Vertical
	5446.0	45.9	3.5	49.4	54.0	-4.6	Average	Vertical
	8168.5	36.8	8.5	45.3	74.0	-28.7	Peak	Vertical
07	1148.5	43.7	-7.2	36.5	74.0	-37.5	Peak	Horizontal
	1522.0	42.4	-6.2	36.2	74.0	-37.8	Peak	Horizontal
	3655.0	41.1	-0.4	40.7	74.0	-33.3	Peak	Horizontal
	1522.0	42.1	-6.2	35.9	74.0	-38.1	Peak	Vertical
	3655.0	39.1	-0.4	38.7	74.0	-35.3	Peak	Vertical
	4573.0	38.0	2.0	40.0	74.0	-34.0	Peak	Vertical

Note: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB/m)

Factor (dB/m) = Cable Loss (dB) + Antenna Factor (dB/m) - Pre_Amplifier Gain (dB)

The Result of Radiated Emission below 1GHz:

Site: WZ-AC1	Test Date: 2022-10-25
Limit: FCC_Part15.209_RSE(3m)	Engineer: Edith Yu
Probe: VULB 9168_25-2000MHz	Polarity: Horizontal
EUT: Spot Mapper	Power: By USB Cable
Test Mode: Transmit by LoRa at 903MHz	



No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV/m)	Factor (dB/m)	Type
1		50.855	23.793	5.603	-16.207	40.000	18.190	PK
2		128.455	22.986	6.427	-20.514	43.500	16.559	PK
3		614.000	30.106	4.374	-15.894	46.000	25.732	PK
4		870.990	42.756	13.706	-3.244	46.000	29.050	PK
5	*	902.515	57.927	28.477	11.927	46.000	29.450	PK
6		960.000	36.022	6.243	-9.978	46.000	29.779	PK

Note 1: " * ", means this data is the worst emission level.

Note 2: Measure Level (dBuV/m) = Reading Level (dBuV) + Factor (dB/m).

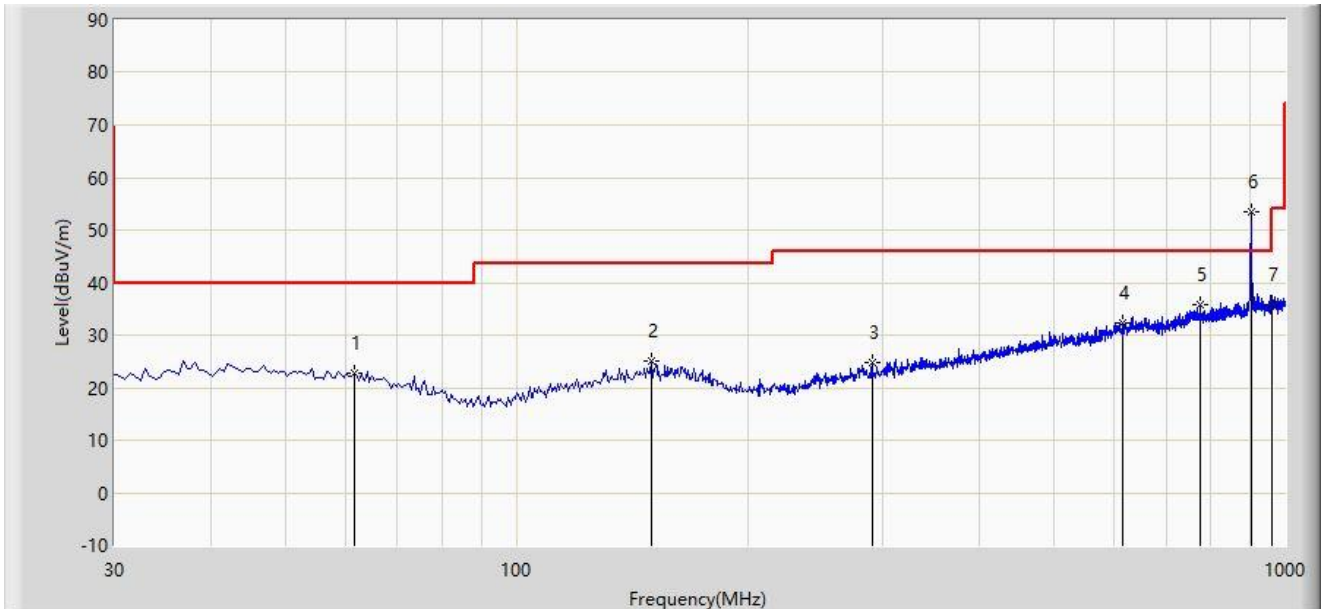
Note 3: Factor (dB/m) = Cable Loss (dB) + Antenna Factor (dB/m).

Note 4: Quasi-Peak measurement was not performed when peak measure level was lower than the quasi-peak limit.

Note 5: The amplitude of radiated emissions (frequency range from 9kHz to 30MHz) is that proximity to ambient noise, which also are attenuated more than 20 dB below the permissible value. Therefore, the data is not presented in the report.

Note 6: Point(5) is the fundamental frequency.

Site: WZ-AC1	Test Date: 2022-10-25
Limit: FCC_Part15.209_RSE(3m)	Engineer: Edith Yu
Probe: VULB 9168_25-2000MHz	Polarity: Vertical
EUT: Spot Mapper	Power: By USB Cable
Test Mode: Transmit by LoRa at 903MHz	



No	Mark	Frequency (MHz)	Measure Level (dBμV/m)	Reading Level (dBμV)	Margin (dB)	Limit (dBμV/m)	Factor (dB/m)	Type
1		61.525	22.866	5.547	-17.134	40.000	17.319	PK
2		149.795	25.000	7.010	-18.500	43.500	17.990	PK
3		289.960	24.739	6.556	-21.261	46.000	18.183	PK
4		614.000	32.183	6.451	-13.817	46.000	25.732	PK
5		774.475	35.911	7.705	-10.089	46.000	28.206	PK
6	*	903.970	53.455	23.968	7.455	46.000	29.487	PK
7		960.000	35.781	6.002	-10.219	46.000	29.779	PK

Note 1: " * ", means this data is the worst emission level.

Note 2: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB/m).

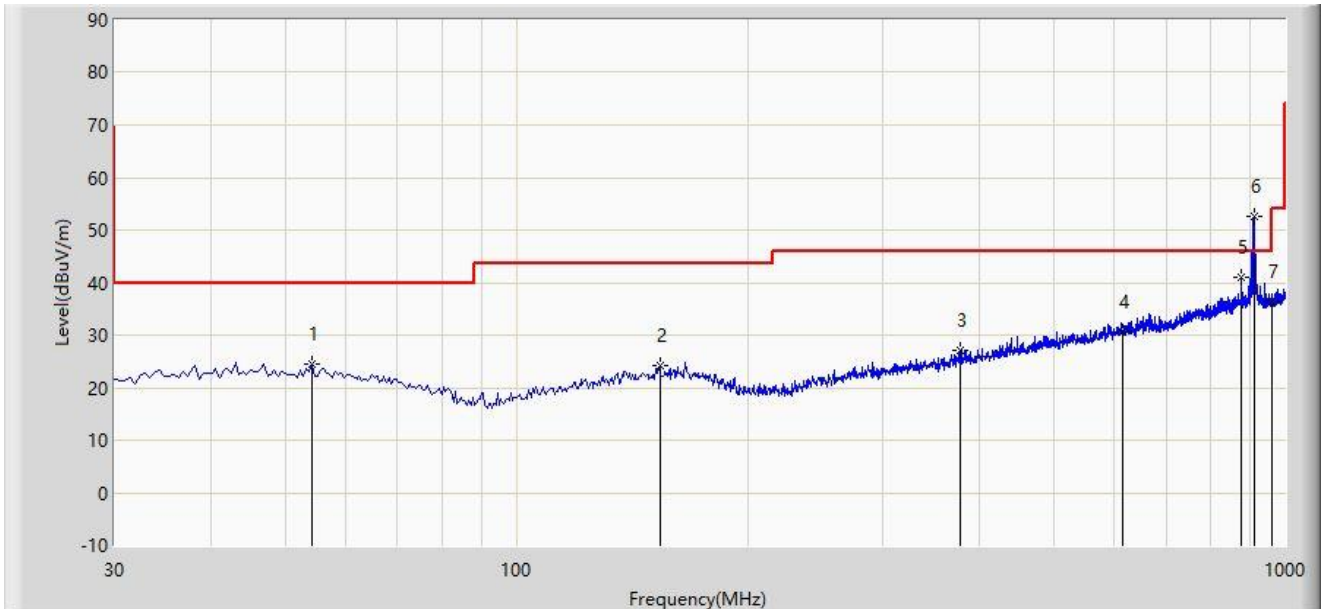
Note 3: Factor (dB/m) = Cable Loss (dB) + Antenna Factor (dB/m).

Note 4: Quasi-Peak measurement was not performed when peak measure level was lower than the quasi-peak limit.

Note 5: The amplitude of radiated emissions (frequency range from 9kHz to 30MHz) is that proximity to ambient noise, which also are attenuated more than 20 dB below the permissible value. Therefore, the data is not presented in the report.

Note 6: Point(6) is the fundamental frequency.

Site: WZ-AC1	Test Date: 2022-10-25
Limit: FCC_Part15.209_RSE(3m)	Engineer: Edith Yu
Probe: VULB 9168_25-2000MHz	Polarity: Horizontal
EUT: Spot Mapper	Power: By USB Cable
Test Mode: Transmit by LoRa at 907.8MHz	



No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV/m)	Factor (dB/m)	Type
1		54.250	24.361	6.419	-15.639	40.000	17.942	PK
2		153.675	24.193	6.056	-19.307	43.500	18.137	PK
3		378.715	27.072	6.736	-18.928	46.000	20.336	PK
4		614.000	30.493	4.761	-15.507	46.000	25.732	PK
5		875.840	40.982	11.958	-5.018	46.000	29.024	PK
6	*	911.730	52.618	22.946	6.618	46.000	29.672	PK
7		960.000	36.440	6.661	-9.560	46.000	29.779	PK

Note 1: " * ", means this data is the worst emission level.

Note 2: Measure Level (dBuV/m) = Reading Level (dBuV) + Factor (dB/m).

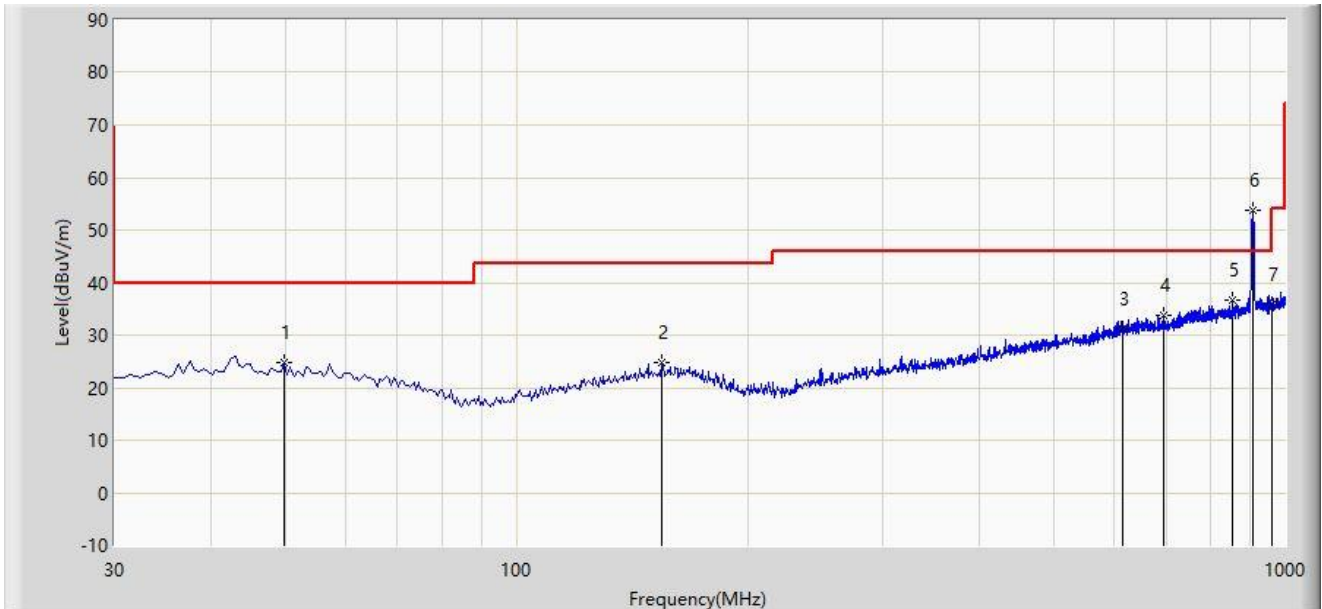
Note 3: Factor (dB/m) = Cable Loss (dB) + Antenna Factor (dB/m).

Note 4: Quasi-Peak measurement was not performed when peak measure level was lower than the quasi-peak limit.

Note 5: The amplitude of radiated emissions (frequency range from 9kHz to 30MHz) is that proximity to ambient noise, which also are attenuated more than 20 dB below the permissible value. Therefore, the data is not presented in the report.

Note 6: Point(6) is the fundamental frequency.

Site: WZ-AC1	Test Date: 2022-10-25
Limit: FCC_Part15.209_RSE(3m)	Engineer: Edith Yu
Probe: VULB 9168_25-2000MHz	Polarity: Vertical
EUT: Spot Mapper	Power: By USB Cable
Test Mode: Transmit by LoRa at 907.8MHz	



No	Mark	Frequency (MHz)	Measure Level (dBμV/m)	Reading Level (dBμV)	Margin (dB)	Limit (dBμV/m)	Factor (dB/m)	Type
1		49.885	24.731	6.490	-15.269	40.000	18.241	PK
2		154.645	24.845	6.699	-18.655	43.500	18.146	PK
3		614.000	31.061	5.329	-14.939	46.000	25.732	PK
4		695.905	33.725	7.194	-12.275	46.000	26.531	PK
5		853.530	36.526	7.644	-9.474	46.000	28.882	PK
6	*	908.820	53.716	24.120	7.716	46.000	29.596	PK
7		960.000	35.817	6.038	-10.183	46.000	29.779	PK

Note 1: " * ", means this data is the worst emission level.

Note 2: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB/m).

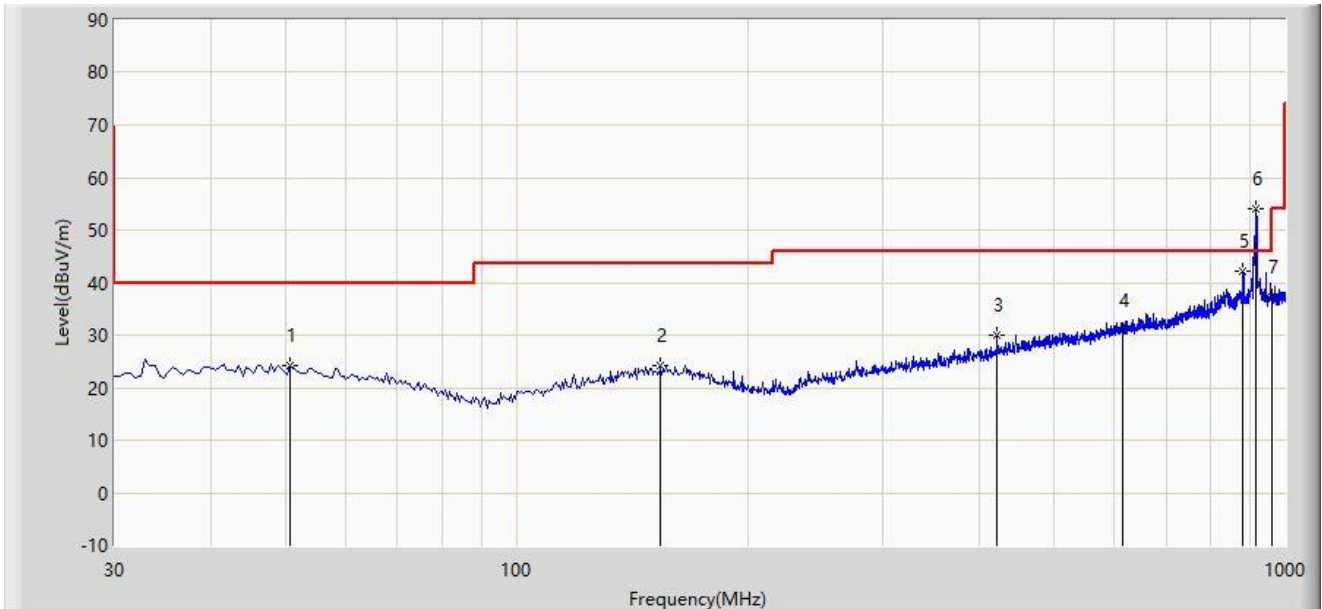
Note 3: Factor (dB/m) = Cable Loss (dB) + Antenna Factor (dB/m).

Note 4: Quasi-Peak measurement was not performed when peak measure level was lower than the quasi-peak limit.

Note 5: The amplitude of radiated emissions (frequency range from 9kHz to 30MHz) is that proximity to ambient noise, which also are attenuated more than 20 dB below the permissible value. Therefore, the data is not presented in the report.

Note 6: Point(6) is the fundamental frequency.

Site: WZ-AC1	Test Date: 2022-10-25
Limit: FCC_Part15.209_RSE(3m)	Engineer: Edith Yu
Probe: VULB 9168_25-2000MHz	Polarity: Horizontal
EUT: Spot Mapper	Power: By USB Cable
Test Mode: Transmit by LoRa at 914.2MHz	



No	Mark	Frequency (MHz)	Measure Level (dBμV/m)	Reading Level (dBμV)	Margin (dB)	Limit (dBμV/m)	Factor (dB/m)	Type
1		50.855	24.089	5.899	-15.911	40.000	18.190	PK
2		154.160	24.083	5.939	-19.417	43.500	18.144	PK
3		422.365	29.978	8.575	-16.022	46.000	21.403	PK
4		614.000	30.967	5.235	-15.033	46.000	25.732	PK
5		882.145	42.151	13.111	-3.849	46.000	29.040	PK
6	*	917.550	54.200	24.386	8.200	46.000	29.814	PK
7		960.000	37.159	7.380	-8.841	46.000	29.779	PK

Note 1: " * ", means this data is the worst emission level.

Note 2: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB/m).

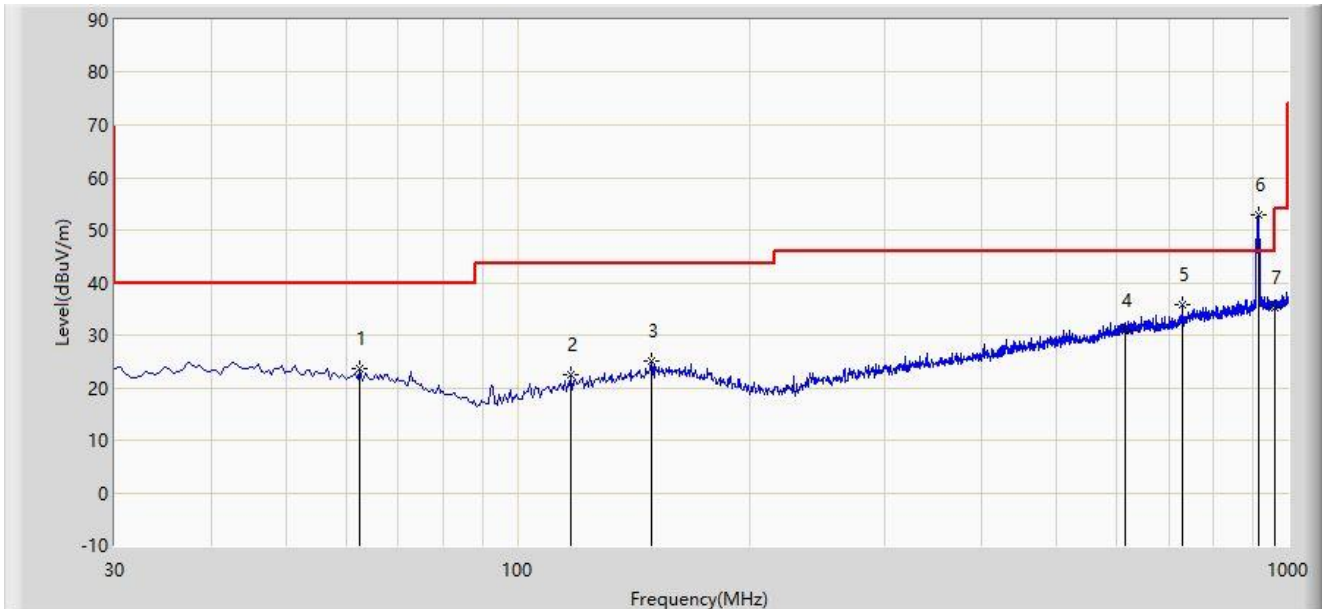
Note 3: Factor (dB/m) = Cable Loss (dB) + Antenna Factor (dB/m).

Note 4: Quasi-Peak measurement was not performed when peak measure level was lower than the quasi-peak limit.

Note 5: The amplitude of radiated emissions (frequency range from 9kHz to 30MHz) is that proximity to ambient noise, which also are attenuated more than 20 dB below the permissible value. Therefore, the data is not presented in the report.

Note 6: Point(6) is the fundamental frequency.

Site: WZ-AC1	Test Date: 2022-10-25
Limit: FCC_Part15.209_RSE(3m)	Engineer: Edith Yu
Probe: VULB 9168_25-2000MHz	Polarity: Vertical
EUT: Spot Mapper	Power: By USB Cable
Test Mode: Transmit by LoRa at 914.2MHz	



No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV/m)	Factor (dB/m)	Type
1		62.495	23.657	6.426	-16.343	40.000	17.231	PK
2		117.300	22.429	6.939	-21.071	43.500	15.490	PK
3		149.310	25.151	7.183	-18.349	43.500	17.968	PK
4		614.000	30.901	5.169	-15.099	46.000	25.732	PK
5		730.340	35.850	8.576	-10.150	46.000	27.274	PK
6	*	914.640	53.007	23.263	7.007	46.000	29.744	PK
7		960.000	35.213	5.434	-10.787	46.000	29.779	PK

Note 1: " * ", means this data is the worst emission level.

Note 2: Measure Level (dBuV/m) = Reading Level (dBuV) + Factor (dB/m).

Note 3: Factor (dB/m) = Cable Loss (dB) + Antenna Factor (dB/m).

Note 4: Quasi-Peak measurement was not performed when peak measure level was lower than the quasi-peak limit.

Note 5: The amplitude of radiated emissions (frequency range from 9kHz to 30MHz) is that proximity to ambient noise, which also are attenuated more than 20 dB below the permissible value. Therefore, the data is not presented in the report.

Note 6: Point(6) is the fundamental frequency.

Appendix B - Test Setup Photograph

Refer to “2209RSU059-UT” file.

Appendix C - EUT Photograph

Refer to “2209RSU059-UE” file.

The End
