



RF MEASUREMENT REPORT

FCC ID: YIY-ASMB0876
IC: 8903A-ASMB0876
Applicant: Industrea Mining Technology Pty Ltd
Product: MINI RF UHF MODULE SiLABS
Model No.: ASMB0876
FCC Rule(s): Part 15 Subpart C (Section 15.247)
IC Rule(s) RSS-247 Issue 2, RSS-GEN Issue 5
AUS Standard: AS/NZS 4268: 2017
Test Procedure(s): ANSI C63.10-2013
Test Date: October 27,2021 ~ March 08, 2022

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
2110RSU017-U1	Rev. 01	Initial Report	03-14-2022	Valid

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1.4. Product Information

Product	MINI RF UHF MODULE SiLABS
Model No.	ASMB0876
SRD Frequency Range	902 ~ 928MHz for FCC & IC 915 ~ 928MHz for Australia
Operating Temp.	-40 ~ 75°C
Rated Input	3.3Vdc
Extreme Voltage	6.0 ~ 18.0Vdc
Test Fixture Normal Voltage	12Vdc
Remark: The information of EUT was provided by the manufacturer, and the accuracy of the information shall be the responsibility of the manufacturer.	

1.5. Radio Specification under Test

For FCC & IC	
Frequency Range	902 ~ 928MHz
Channel Number	25
Modulation	4GFSK
For Australia	
Frequency Range	915 ~ 928MHz
Channel Number	12
Modulation	4GFSK

1.6. Antenna Information

Antenna Part No.	Antenna Type	Peak Gain
PROD1196	Omni-directional	2.9 dBi
EA2-0287-N01SP-050	Omni-directional	8 dBi
MISC1626	Monopole Type	2 dBi
Remark: The antenna type of PROD1196 and EA2-0287-N01SP-050 are the same, so we chose the antenna with maximum gain for all testing.		

2. TEST CONFIGURATION

2.1. Test Mode

Mode 1: Transmit at Frequency 903MHz (For FCC & IC) with Antenna EA2-0287-N01SP-050
Mode 2: Transmit at Frequency 915MHz (For FCC & IC) with Antenna EA2-0287-N01SP-050
Mode 3: Transmit at Frequency 916MHz (For Australia) with Antenna EA2-0287-N01SP-050
Mode 4: Transmit at Frequency 921MHz (For Australia) with Antenna EA2-0287-N01SP-050
Mode 5: Transmit at Frequency 927MHz (For FCC & IC & Australia) with Antenna EA2-0287-N01SP-050
Mode 6: Transmit at Frequency 903MHz (For FCC & IC) with Antenna MISC1626
Mode 7: Transmit at Frequency 915MHz (For FCC & IC) with Antenna MISC1626
Mode 8: Transmit at Frequency 916MHz (For Australia) with Antenna MISC1626
Mode 9: Transmit at Frequency 921MHz (For Australia) with Antenna MISC1626
Mode 10: Transmit at Frequency 927MHz (For FCC & IC & Australia) with Antenna MISC1626

2.2. Test Environment Condition

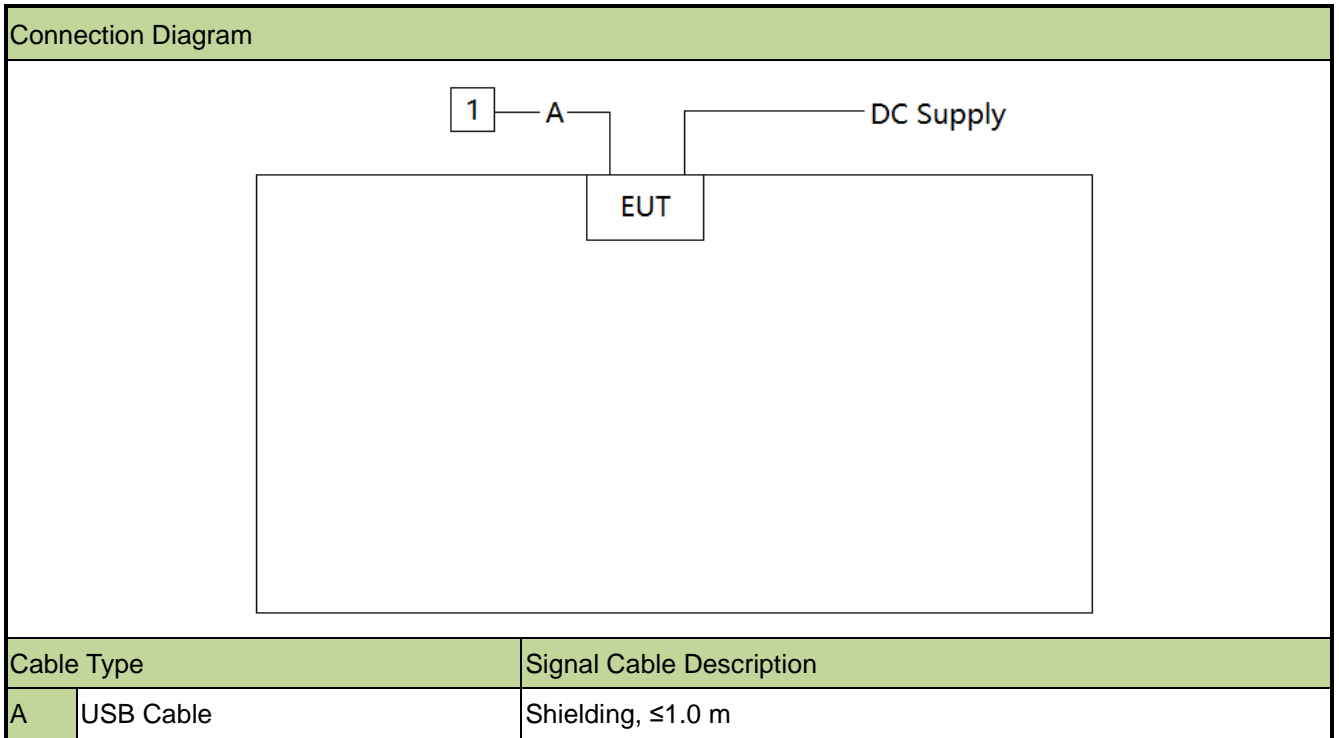
Ambient Temperature	15°C ~ 35°C
Relative Humidity	20%RH ~ 75%RH

2.3. Test Software

The test utility software used during testing was “PT Manager”, and the version was 0.04.015.

2.4. Test System Connection Diagram

The ANSI C63.10: 2013 was used to reference the appropriate EUT setup for testing.



2.5. Test System Details

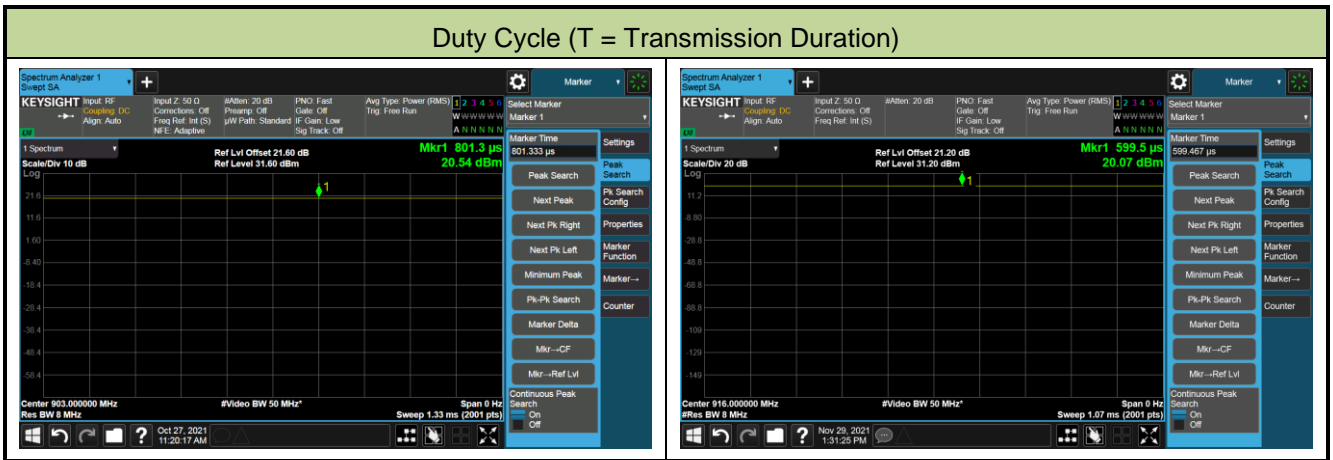
The types for all equipment and descriptions of all cables used in the tested system are:

Product	Manufacturer	Model No.
1	Notebook	Lenovo E495

2.6. Duty Cycle

The maximum achievable duty cycles for all modes were determined based on measurements performed on a spectrum analyzer in zero-span mode with RBW = 8MHz, VBW = 50MHz. The RBW and VBW were both greater than $50/T$, where T is the minimum transmission duration, and the number of sweep points across T was greater than 100. The duty cycles are as follows:

Test Mode	Duty Cycle
Mode 1	100%
Mode 3	100%



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 **used a unique coupling.**

Conclusion:

The device unit complies with the requirement of §15.203.

4. MEASURING INSTRUMENTS

Instrument	Manufacturer	Model No.	Asset No.	Cali. Interval	Cali. Due Date	Test Site
EMI Test Receiver	R&S	ESR3	MRTSUE06185	1 year	2022/1/12	SIP-AC1 & SIP-AC3
EMI Test Receiver	R&S	ESR3	MRTSUE06613	1 year	2022/6/24	SIP-AC1 & SIP-AC3
Preamplifier	EMCI	EMC001330	MRTSUE06643	1 year	2022/1/14	SIP-AC1 & SIP-AC3
Loop Antenna	Schwarzbeck	FMZB 1519 B	MRTSUE06937	1 year	2022/3/9	SIP-AC1 & SIP-AC3
Signal Analyzer	Keysight	N9010B	MRTSUE06559	1 year	2022/6/24	SIP-AC1 & SIP-AC3
Signal Analyzer	Keysight	N9010B	MRTSUE06603	1 year	2022/10/31	SIP-AC1 & SIP-AC3
Signal Analyzer	Keysight	N9020B	MRTSUE06604	1 year	2022/9/7	SIP-AC1 & SIP-AC3
Anechoic Chamber	RIKEN	SIP-AC1	MRTSUE06554	1 year	2022/12/23	SIP-AC1
Preamplifier	EMCI	EMC051845SE	MRTSUE06600	1 year	2022/11/8	SIP-AC1
Horn Antenna	R&S	HF907	MRTSUE06610	1 year	2022/8/5	SIP-AC1
Thermohygrometer	testo	608-H1	MRTSUE06616	1 year	2022/11/2	SIP-AC1
Thermohygrometer	testo	608-H1	MRTSUE06620	1 year	2022/11/28	SIP-AC1
TRILOG Antenna	Schwarzbeck	VULB 9168	MRTSUE06645	1 year	2022/8/26	SIP-AC1
Preamplifier	Schwarzbeck	BBV 9721	MRTSUE06121	1 year	2022/6/9	SIP-AC3
Horn Antenna	Schwarzbeck	BBHA 9170	MRTSUE06598	1 year	2022/11/9	SIP-AC3
Horn Antenna	R&S	HF907	MRTSUE06611	1 year	2022/9/12	SIP-AC3
Thermohygrometer	testo	608-H1	MRTSUE06619	1 year	2022/11/2	SIP-AC3
Thermohygrometer	testo	608-H1	MRTSUE06622	1 year	2021/12/3	SIP-AC3
Preamplifier	EMCI	EMC012645SE	MRTSUE06642	1 year	2022/1/14	SIP-AC3
TRILOG Antenna	Schwarzbeck	VULB 9168	MRTSUE06646	1 year	2022/8/26	SIP-AC3
Anechoic Chamber	RIKEN	SIP-AC3	MRTSUE06782	1 year	2021/12/24	SIP-AC3
Anechoic Chamber	RIKEN	SIP-AC3	MRTSUE06782	1 year	2022/12/23	SIP-AC3
Temperature Chamber	BAOYT	BYG-408CS	MRTSUE06847	1 year	2022/2/23	SIP-TR1
Communication Tester	R&S	CMW500	MRTSUE06881	1 year	2022/6/2	SIP-TR1
Broadband Field Meter	narda	NBM 550	MRTSUE06897	3 years	2023/2/26	SIP-TR1
E-Field Probe	narda	EF 0691	MRTSUE06898	3 years	2023/8/13	SIP-TR1
DECT Tester	RTX	RTX2012	MRTSUE06914	1 year	2022/2/23	SIP-TR1
B-Field Probe	narda	100 cm ²	MRTSUE06919	3 years	2024/2/14	SIP-TR1
Exposure Level Tester	narda	ELT-400	MRTSUE06920	3 years	2023/11/29	SIP-TR1
H-Field Probe	narda	HF 3061	MRTSUE06921	3 years	2023/12/1	SIP-TR1
H-Field Probe	narda	HF 0191	MRTSUE06922	3 years	2023/5/5	SIP-TR1
E-Field Probe	narda	EF 9091	MRTSUE06923	3 years	2024/2/15	SIP-TR1
Thermohygrometer	testo	Testo 608-H1	MRTSUE11022	1 year	2022/11/5	SIP-TR1
Signal Analyzer	Keysight	N9030B	MRTSUE06395	1 year	2022/8/8	SIP-TR1
Signal Generator	R&S	SMU200A	MRTSUE06489	1 year	2022/2/23	SIP-TR1

Instrument	Manufacturer	Model No.	Asset No.	Cali. Interval	Cali. Due Date	Test Site
USB Power Sensor	Keysight	U2021XA	MRTSUE06595	1 year	2022/9/7	SIP-TR1
Signal Generator	Keysight	N5182B	MRTSUE06605	1 year	2022/10/31	SIP-TR1

Software	Version	Function
EMI Software	V3	EMI Test Software

5. 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 $k = 2$.

AC Conducted Emission Measurement
Measurement Uncertainty for a Level of Confidence of 95% ($U=2Uc(y)$): 9kHz~150kHz: 3.74dB 150kHz~30MHz: 3.44dB
Radiated Disturbance
Measurement Uncertainty for a Level of Confidence of 95% ($U=2Uc(y)$): Horizontal: 30MHz~300MHz: 5.04dB 300MHz~1GHz: 4.95dB 1GHz~40GHz: 6.40dB Vertical: 30MHz~300MHz: 5.24dB 300MHz~1GHz: 6.03dB 1GHz~40GHz: 6.40dB
Spurious Emissions, Conducted
Measurement Uncertainty for a Level of Confidence of 95% ($U=2Uc(y)$): 0.78dB
Output Power
Measurement Uncertainty for a Level of Confidence of 95% ($U=2Uc(y)$): 1.13dB
Power Spectrum Density
Measurement Uncertainty for a Level of Confidence of 95% ($U=2Uc(y)$): 1.15dB
Occupied Bandwidth
Measurement Uncertainty for a Level of Confidence of 95% ($U=2Uc(y)$): 0.28%

6. TEST RESULT

6.1. Summary

FCC Part Section(s)	ISED Section(s)	Test Description	Test Condition	Test Result
15.247(a)(2)	RSS-247 [5.2 (a)]	6dB Bandwidth	Conducted	Pass
N/A	RSS-Gen [6.7]	99% Bandwidth		Pass
15.247(b)(3)	RSS-247 [5.4(d)]	Output Power		Pass
15.247(e)	RSS-247 [5.2 (b)]	Power Spectral Density		Pass
15.247(d)	RSS-247 [5.5]	Band Edge / Out-of-Band Emissions		Pass
15.205 15.209	RSS-247 [5.5]	General Field Strength (Restricted Bands and Radiated Emission)	Radiated	Pass
15.207	RSS-Gen [8.8]	AC Conducted Emissions 150kHz - 30MHz	Line Conducted	Pass

Notes:

- 1) 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.
- 2) 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.
- 3) N/A means this item is not applicable, and the details refer to relevant section.
- 4) Australian standard AS/NZS 4268 compliance is based on FCC 15.247 testing.

6.2. Occupied Bandwidth Measurement

6.2.1. Test Limit

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

6.2.2. Test Procedure used

ANSI C63.10-2013 - Section 11.8 (6dB bandwidth)

6.2.3. Test Setting

For 6dB bandwidth

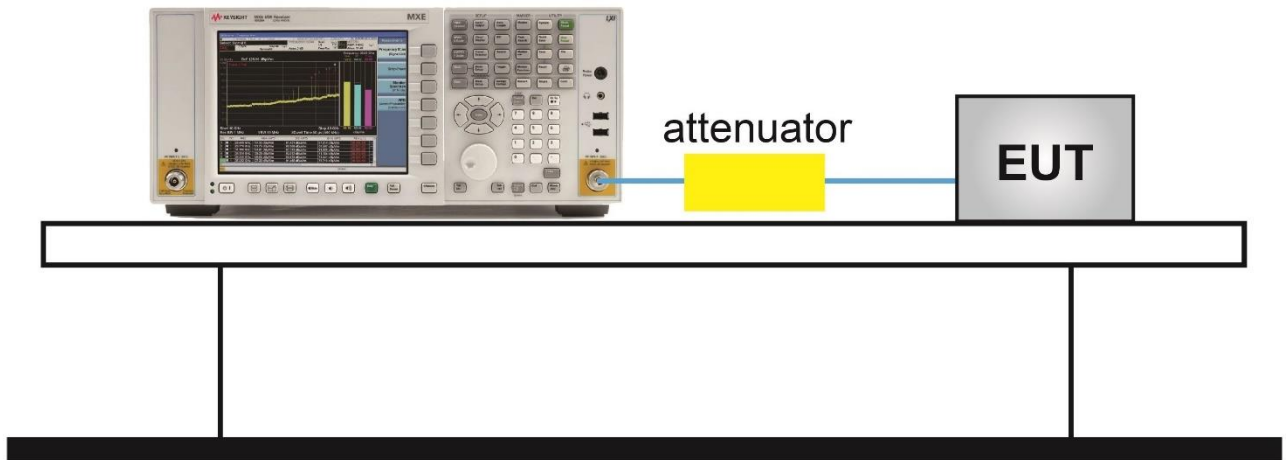
1. Set RBW = 100 kHz
2. VBW $\geq 3 \times$ RBW
3. Detector = Peak
4. Trace mode = Max hold
5. Sweep = Auto couple
6. Allow the trace to stabilize
7. Use the X dB bandwidth mode with X set to 6 dB

For 99% bandwidth

1. Span = 1.5 times to 5 times the OBW
2. Set RBW = 1% to 5% the OBW
3. VBW $\geq 3 \times$ RBW
4. Detector = Peak
5. Trace mode = Max hold
6. Sweep = Auto couple
7. Allow the trace to stabilize

6.2.4. Test Setup

Spectrum Analyzer



6.2.5. Test Result

Test Site	SIP-TR1	Test Engineer	Alisa Deng
Test Date	2021/10/27		

For FCC & IC:

Test Mode	Frequency (MHz)	6dB Bandwidth (MHz)	Limit (MHz)	99% Bandwidth (MHz)	Result
Mode 1	903	0.894	≥ 0.5	1.06	Pass
Mode 2	915	0.897	≥ 0.5	1.07	Pass
Mode 5	927	0.895	≥ 0.5	1.06	Pass

For Australia:

Test Mode	Frequency (MHz)	6dB Bandwidth (MHz)	Limit (MHz)	Result
Mode 3	916	0.898	≥ 0.5	Pass
Mode 4	921	0.933	≥ 0.5	Pass
Mode 5	927	0.895	≥ 0.5	Pass





6.3. Output Power Measurement

6.3.1. Test Limit

The maximum out power shall be less 1 Watt (30dBm) and the EIRP shall not exceed 4 Watt (36dBm).

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.

6.3.2. Test Procedure Used

ANSI C63.10-2013 - Section 11.9.1.3 Method PKPM1

ANSI C63.10-2013 - Section 11.9.2.3.2 Method AVGPM-G

6.3.3. Test Setting

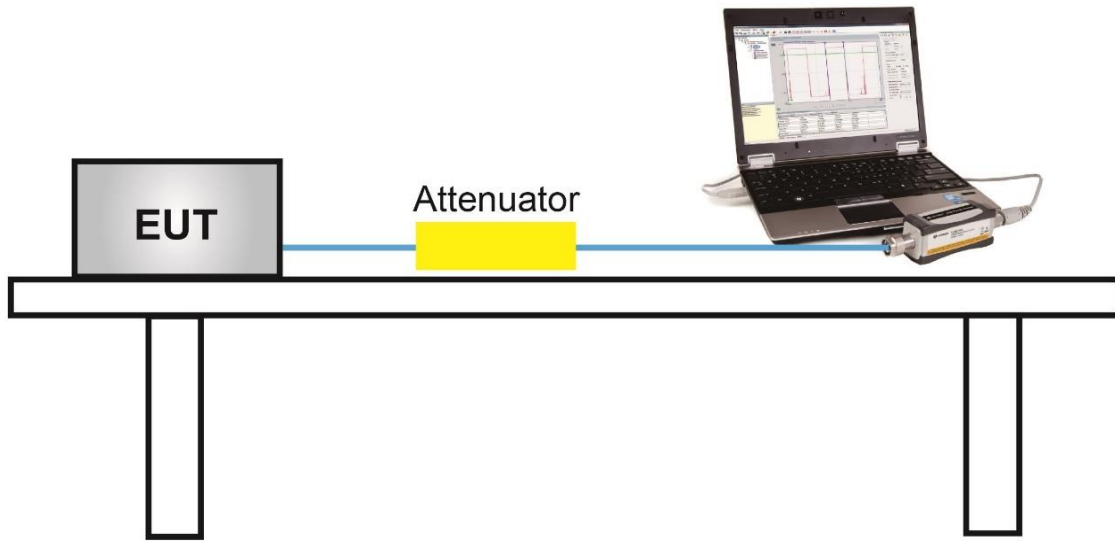
PKPM1 Peak-reading power meter method

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

Method AVGPM-G (Measurement using a gated RF average-reading power meter)

Measurements may be performed using a wideband gated RF power meter provided that the gate parameters are adjusted such that the power is measured only when the EUT is transmitting at its maximum power control level. Since this measurement is made only during the ON time of the transmitter, no duty cycle correction is required.

6.3.4. Test Setup



6.3.5. Test Result

Test Site	SIP-TR1	Test Engineer	Alisa Deng
Test Date	2021/10/27		

Test Mode	Frequency (MHz)	Output Power (dBm)	Limit (dBm)	Max EIRP (dBm)	EIRP Limit (dBm)	Result
Peak Power						
Mode 1	903	20.64	≤ 28.00	28.64	≤ 36.00	Pass
Mode 2	915	20.25	≤ 28.00	28.25	≤ 36.00	Pass
Mode 3	916	19.97	≤ 28.00	27.97	≤ 36.00	Pass
Mode 4	921	19.79	≤ 28.00	27.79	≤ 36.00	Pass
Mode 5	927	19.89	≤ 28.00	27.89	≤ 36.00	Pass
Average Power (Reporting Only)						
Mode 1	903	20.60	≤ 28.00	28.60	≤ 36.00	Pass
Mode 2	915	20.21	≤ 28.00	28.21	≤ 36.00	Pass
Mode 3	916	19.92	≤ 28.00	27.92	≤ 36.00	Pass
Mode 4	921	19.75	≤ 28.00	27.75	≤ 36.00	Pass
Mode 5	927	19.85	≤ 28.00	27.85	≤ 36.00	Pass

Note: EIRP (dBm) = Output Power (dBm) + Antenna Gain (dBi), Antenna Gain = 8 dBi

6.4. Power Spectral Density Measurement

6.4.1. Test Limit

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

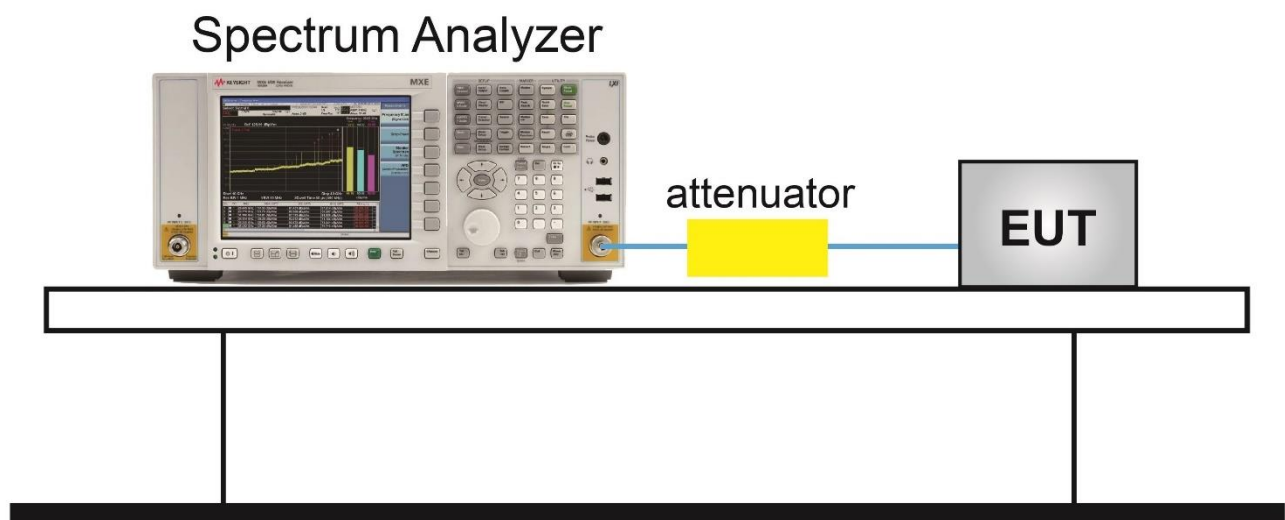
6.4.2. Test Procedure Used

ANSI C63.10-2013 Section 11.10.2

6.4.3. Test Setting

1. Analyzer was set to the center frequency of the DTS channel under investigation
2. Span = 1.5 times the DTS channel bandwidth
3. RBW = 3kHz
4. VBW = 10kHz
5. Detector = peak
6. Sweep time = auto couple
7. Trace mode = max hold
8. Trace was allowed to stabilize

6.4.4. Test Setup



6.4.5. Test Result

Test Site	SIP-TR1	Test Engineer	Alisa Deng
Test Date	2021/10/27		

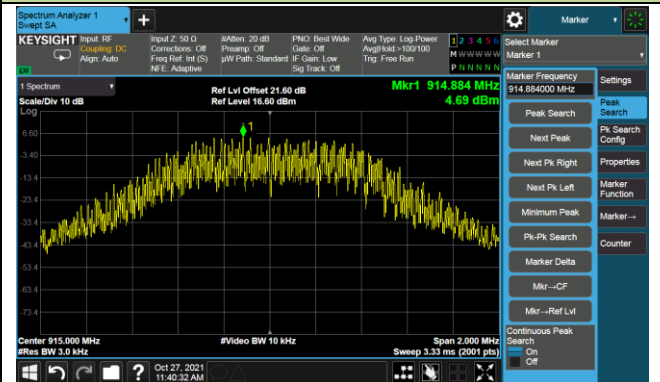
Test Mode	Frequency (MHz)	PSD Result (dBm / 3kHz)	Limit (dBm / 3kHz)	Result
Mode 1	903	5.09	≤ 8.00	Pass
Mode 2	915	4.69	≤ 8.00	Pass
Mode 3	916	4.30	≤ 8.00	Pass
Mode 4	921	4.18	≤ 8.00	Pass
Mode 5	927	4.24	≤ 8.00	Pass

PSD

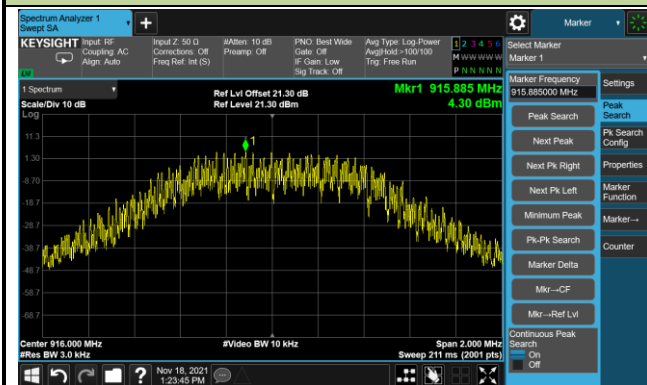
903MHz



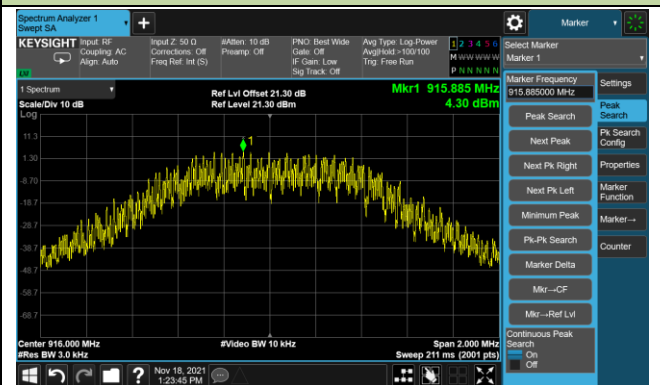
915MHz



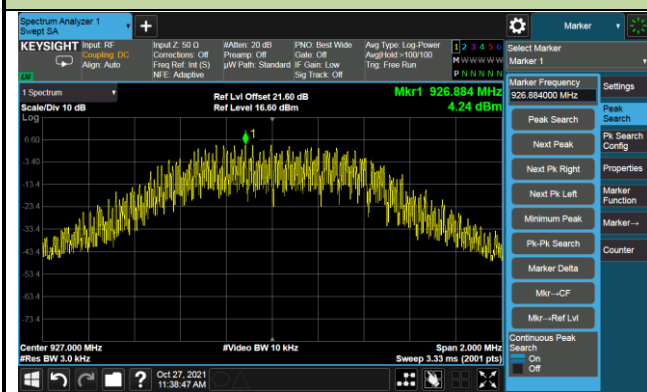
916MHz



921MHz



927MHz



6.5. Conducted Band Edge and Out-of-Band Emissions

6.5.1. Test Limit

The limit for out-of-band spurious emissions at the band edge is 20dB below the fundamental emission level, as determined from the in-band power measurement of the DTS channel performed in a 100kHz bandwidth per the PSD procedure.

6.5.2. Test Procedure Used

ANSI C63.10-2013 Section 11.11

6.5.3. Test Setting

Reference level measurement

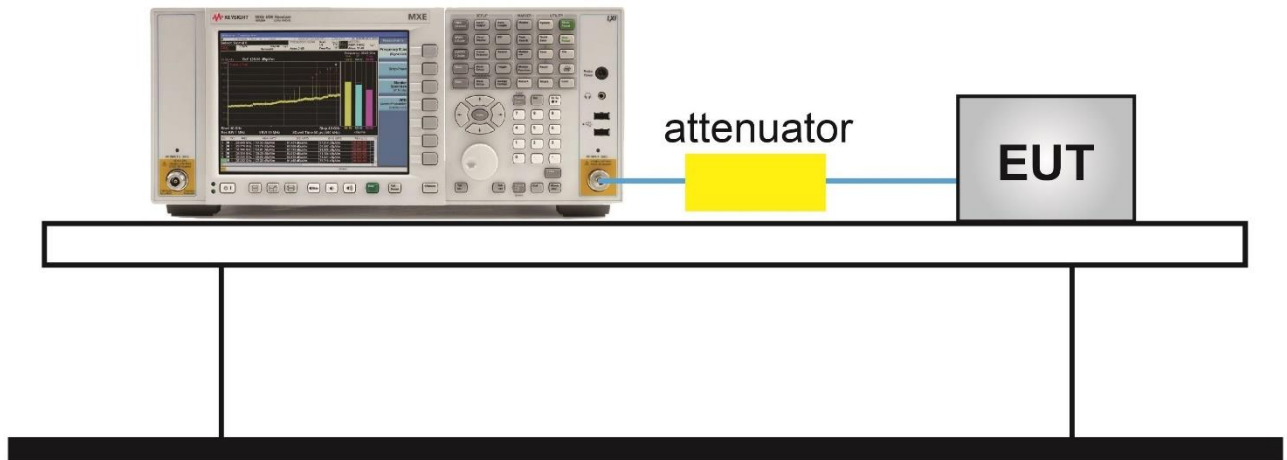
1. Set instrument center frequency to DTS channel center frequency
2. Set the span to ≥ 1.5 times the DTS bandwidth
3. Set the RBW = 100 kHz
4. Set the VBW $\geq 3 \times$ RBW
5. Detector = peak
6. Sweep time = auto couple
7. Trace mode = max hold
8. Allow trace to fully stabilize

Emission level measurement

1. Set the center frequency and span to encompass frequency range to be measured
2. RBW = 100kHz
3. VBW = 300kHz
4. Detector = Peak
5. Trace mode = max hold
6. Sweep time = auto couple
7. The trace was allowed to stabilize

6.5.4. Test Setup

Spectrum Analyzer



6.5.5. Test Result

Test Site	SIP-TR1	Test Engineer	Alisa Deng
Test Date	2021/10/27		

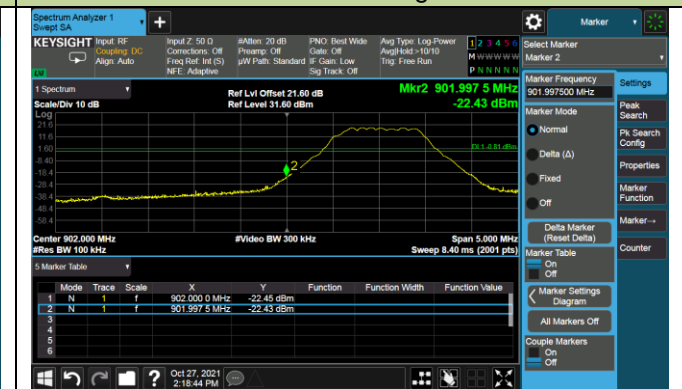
Test Mode	Frequency (MHz)	Limit	Result
Mode 1	903	20dBc	Pass
Mode 2	915	20dBc	Pass
Mode 3	916	20dBc	Pass
Mode 4	921	20dBc	Pass
Mode 5	927	20dBc	Pass

Out-of-Band Emissions

903MHz

100kHz PSD reference Level

Low Band Edge



Spurious Emission 30MHz ~ 25GHz

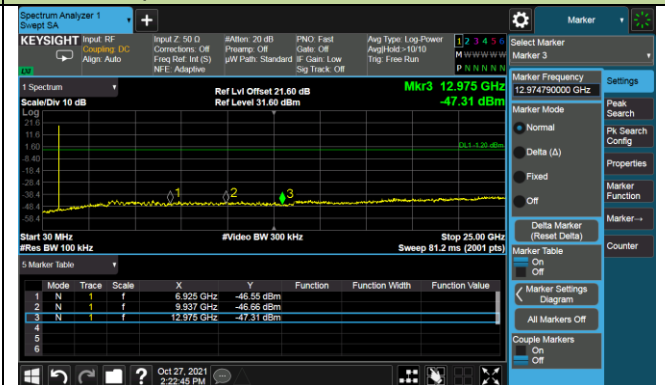


915MHz

100kHz PSD reference Level



Spurious Emission 30MHz ~ 25GHz



916MHz

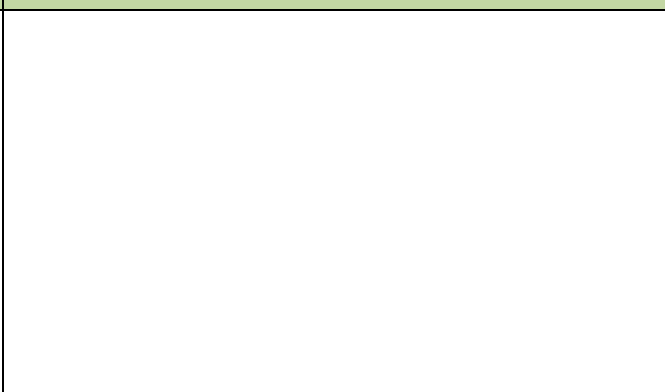
100kHz PSD reference Level



Low Band Edge



Spurious Emission 30MHz ~ 25GHz

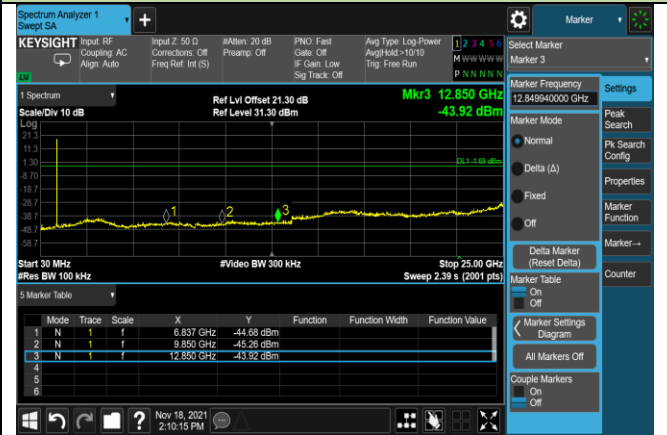


921MHz

100kHz PSD reference Level



Spurious Emission 30MHz ~ 25GHz

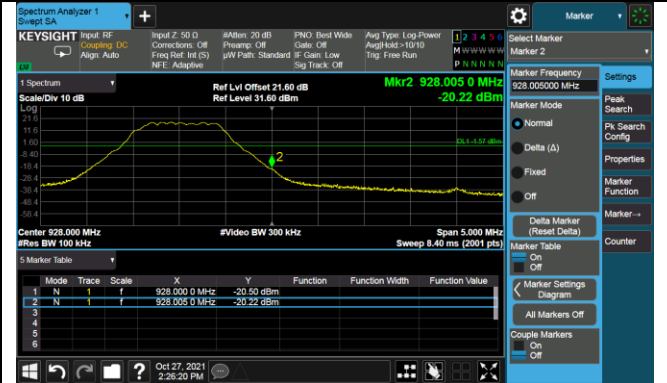


927MHz

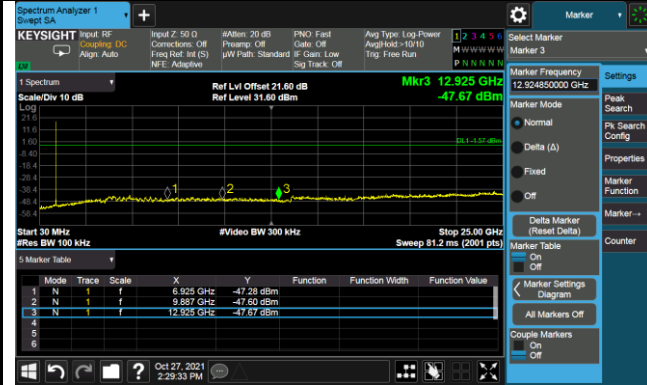
100kHz PSD reference Level



High Band Edge



Spurious Emission 30MHz ~ 25GHz



6.6. Radiated Spurious Emission Measurement

6.6.1. Test Limit

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

All out of band emissions appearing in a restricted band as specified in Section 8.10 of RSS-Gen, must not exceed the limits shown in Table per Section 8.9.

FCC Part 15 Subpart C Paragraph 15.209 & RSS-Gen Section 8.9		
Frequency [MHz]	Field Strength [$\mu\text{V}/\text{m}$]	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

6.6.2. Test Procedure Used

ANSI C63.10-2013 Section 6.3

ANSI C63.10-2013 Section 6.4

ANSI C63.10-2013 Section 6.5

ANSI C63.10-2013 Section 6.6

6.6.3. 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

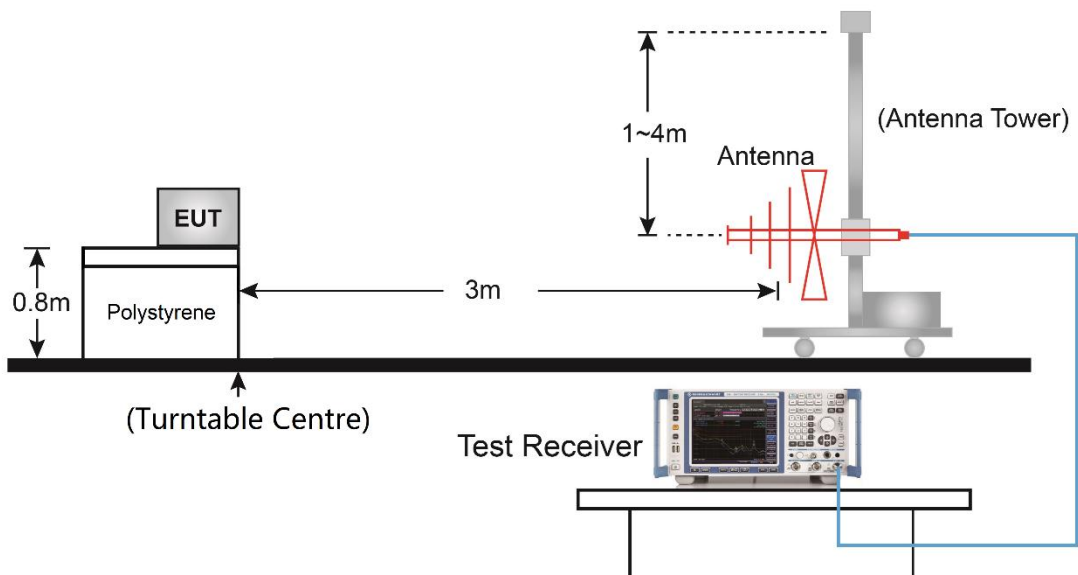
5. Sweep time = auto

6. Trace mode = max hold

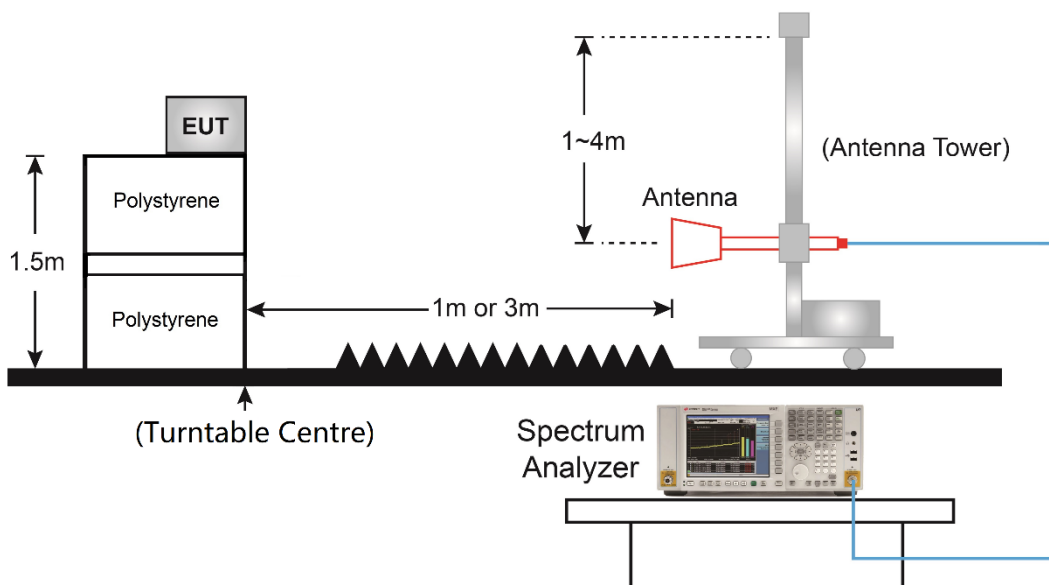
7. Trace was allowed to stabilize

6.6.4. Test Setup

Below 1GHz Test Setup:



Above 1GHz Test Setup:



6.6.5. Test Result

Test Site	SIP-AC3	Test Engineer	White Wang
Test Date	2021/10/30		
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 shown in the report.		

Frequency (MHz)	Measure Level (dB μ V/m)	Reading Level (dB μ V)	Margin (dB)	Limit (dB μ V/m)	Factor (dB/m)	Detector	Polarization
Mode 1							
4654.0	40.4	49.7	-33.6	74.0	-9.3	Peak	Horizontal
5419.0	45.4	54.4	-28.6	74.0	-9.0	Peak	Horizontal
8132.5	46.9	52.1	-27.1	74.0	-5.2	Peak	Horizontal
4514.5	44.1	53.5	-29.9	74.0	-9.4	Peak	Vertical
5414.5	52.6	61.6	-21.4	74.0	-9.0	Peak	Vertical
8128.0	48.7	54.0	-25.3	74.0	-5.3	Peak	Vertical
Mode 2							
4573.0	41.5	50.8	-32.5	74.0	-9.3	Peak	Horizontal
7664.5	44.2	50.2	-29.8	74.0	-6.0	Peak	Horizontal
8231.5	48.1	53.2	-25.9	74.0	-5.1	Peak	Horizontal
4217.5	40.2	49.8	-33.8	74.0	-9.6	Peak	Vertical
4577.5	46.3	55.6	-27.7	74.0	-9.3	Peak	Vertical
8236.0	49.4	54.5	-24.6	74.0	-5.1	Peak	Vertical
Mode 3							
4577.5	42.99	52.33	-31.01	74.0	-9.34	Peak	Horizontal
7309.0	43.09	49.56	-30.91	74.0	-6.47	Peak	Horizontal
8240.5	50.09	55.13	-23.91	74.0	-5.04	Peak	Horizontal
4577.5	45.34	54.68	-28.66	74.0	-9.34	Peak	Vertical
8245	52.19	57.22	-21.81	74.0	-5.03	Average	Vertical
8245	41.17	46.2	-12.83	54.0	-5.03	Peak	Vertical
9154	47.35	51.02	-26.65	74.0	-3.67	Peak	Vertical

Mode 4							
4604.5	43.15	52.5	-30.85	74.0	-9.35	Peak	Horizontal
8290.0	49.63	54.56	-24.37	74.0	-4.93	Peak	Horizontal
9041.5	44.6	48.32	-29.4	74.0	-3.72	Peak	Horizontal
4604.5	45.61	54.96	-28.39	74.0	-9.35	Peak	Vertical
7372.0	41.87	48.3	-32.13	74.0	-6.43	Peak	Vertical
8290.0	51.96	56.89	-22.04	74.0	-4.93	Peak	Vertical
Mode 5							
4631.5	42.5	51.9	-31.5	74.0	-9.4	Peak	Horizontal
7417.0	44.5	50.8	-29.5	74.0	-6.3	Peak	Horizontal
8339.5	46.3	51.2	-27.7	74.0	-4.9	Peak	Horizontal
4636.0	45.8	55.1	-28.2	74.0	-9.3	Peak	Vertical
7412.5	46.2	52.5	-27.8	74.0	-6.3	Peak	Vertical
8344.0	46.6	51.4	-27.4	74.0	-4.8	Peak	Vertical
Note 1: Measure Level (dB μ V/m) = Reading Level (dB μ V) + Factor (dB/m) Factor (dB/m) = Cable Loss (dB) + Antenna Factor (dB/m) - Pre_Amplifier Gain (dB)							

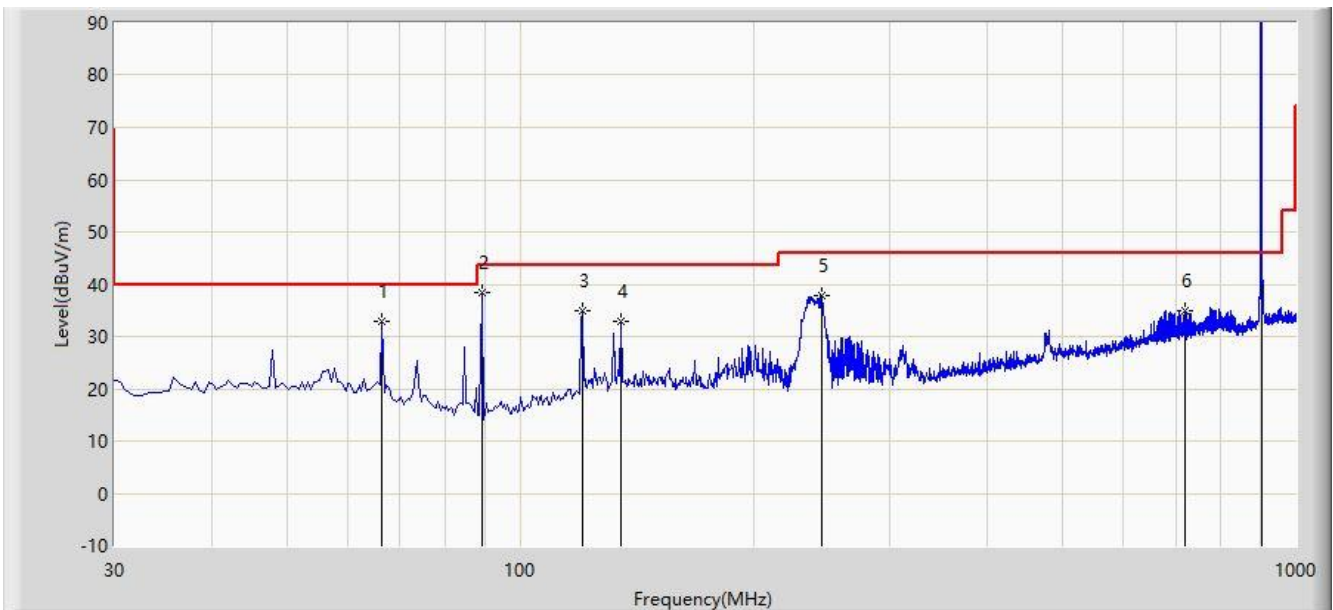
Test Site	SIP-AC1	Test Engineer	Kyrie Xie
Test Date	2022/03/07		
Remark	1. Average measurement was not performed if peak level lower than average limit. 2. Other frequency was 20dB below limit line within 1-18GHz, there is not shown in the report.		

Frequency (MHz)	Measure Level (dB μ V/m)	Reading Level (dB μ V)	Margin (dB)	Limit (dB μ V/m)	Factor (dB/m)	Detector	Polarization
Mode 6							
2708.5	43.8	59.5	-30.2	74.0	-15.7	Peak	Horizontal
4519.0	45.5	56.1	-28.5	74.0	-10.7	Peak	Horizontal
5420.0	48.8	57.9	-25.2	74.0	-9.1	Peak	Horizontal
2708.5	49.8	65.5	-24.2	74.0	-15.7	Peak	Vertical
4510.5	50.2	60.7	-23.8	74.0	-10.5	Peak	Vertical
5420.0	53.1	62.1	-20.9	74.0	-9.1	Peak	Vertical
5420.0	48.5	57.5	-5.5	54.0	-9.1	Average	Vertical
Mode 7							
2742.5	46.7	62.2	-27.3	74.0	-15.5	Peak	Horizontal
4570.0	43.8	54.5	-30.2	74.0	-10.7	Peak	Horizontal
7324.0	48.2	54.9	-25.8	74.0	-6.7	Peak	Horizontal
2742.5	51.9	67.5	-22.1	74.0	-15.5	Peak	Vertical
2742.5	45.7	61.2	-8.3	54.0	-15.5	Average	Vertical
4578.5	46.9	57.6	-27.1	74.0	-10.6	Peak	Vertical
7315.5	50.0	56.9	-24.0	74.0	-6.9	Peak	Vertical
Mode 8							
2751.0	46.3	61.7	-27.7	74.0	-15.4	Peak	Horizontal
4578.5	43.0	53.6	-31.0	74.0	-10.6	Peak	Horizontal
7332.5	47.7	54.2	-26.3	74.0	-6.5	Peak	Horizontal
2751.0	51.6	67.0	-22.4	74.0	-15.4	Peak	Vertical
2751.0	45.4	60.8	-8.6	54.0	-15.4	Average	Vertical
4578.5	46.0	56.7	-28.0	74.0	-10.6	Peak	Vertical
7324.0	49.1	55.8	-24.9	74.0	-6.7	Peak	Vertical
2751.0	51.6	67.0	-22.4	74.0	-15.4	Peak	Vertical

Mode 9							
2759.5	45.9	61.3	-28.1	74.0	-15.4	Peak	Horizontal
4918.5	41.6	51.0	-32.4	74.0	-9.4	Peak	Horizontal
7375.0	45.4	51.8	-28.6	74.0	-6.4	Peak	Horizontal
2759.5	50.5	65.8	-23.5	74.0	-15.4	Peak	Vertical
3686.0	42.9	54.5	-31.1	74.0	-11.6	Peak	Vertical
7366.5	45.8	52.1	-28.2	74.0	-6.4	Peak	Vertical
Mode 10							
2785.0	41.7	57.1	-32.3	74.0	-15.4	Peak	Horizontal
4638.0	41.7	51.8	-32.3	74.0	-10.1	Peak	Horizontal
7417.5	46.6	52.9	-27.4	74.0	-6.3	Peak	Horizontal
2785.0	47.5	63.0	-26.5	74.0	-15.4	Peak	Vertical
4638.0	47.6	57.7	-26.4	74.0	-10.1	Peak	Vertical
7417.5	47.0	53.4	-27.0	74.0	-6.3	Peak	Vertical
Note 1: Measure Level (dB μ V/m) = Reading Level (dB μ V) + 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: SIP-AC3	Test Date: 2021/10/30
Limit: FCC_Part15.209_RE(3m)	Engineer: White Wang
Probe: SIP-AC3_VULB 9168 _30-1000MHz	Polarity: Horizontal
EUT: MINI RF UHF MODULE SiLABS	Power: 3.3Vdc
Note: Test Mode 1	



No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV/m)	Factor (dB/m)	Type
1			66.375	32.972	16.677	-7.028	40.000	16.295	PK
2			89.170	38.515	26.222	-4.985	43.500	12.293	PK
3			120.210	34.905	19.037	-8.595	43.500	15.868	PK
4			134.760	32.788	15.513	-10.712	43.500	17.275	PK
5			245.340	37.868	21.127	-8.132	46.000	16.741	PK
6			720.155	35.036	7.960	-10.964	46.000	27.076	PK
7	X	*	902.515	102.900	73.578	N/A	N/A	29.322	PK

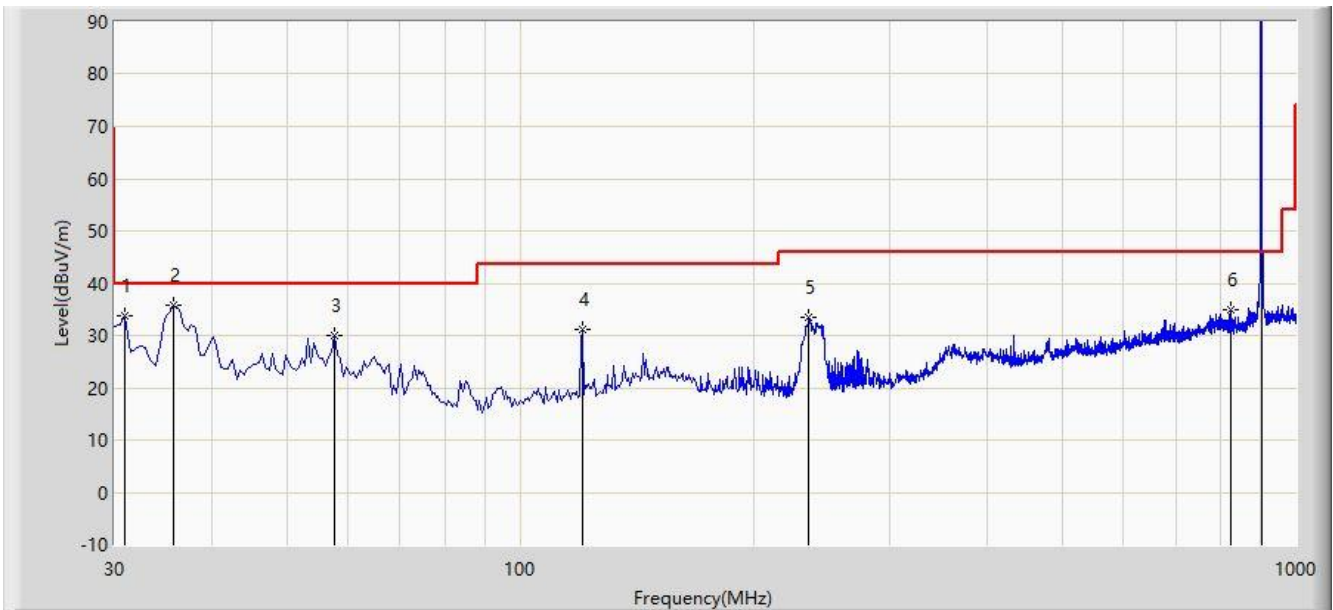
Note 1: Measure Level (dB μ V/m) = Reading Level (dB μ V) + Factor (dB/m)

Factor (dB/m) = Cable Loss (dB) + Antenna Factor (dB/m)

Note 2: 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 3: “*” During the radiated emission testing, there was fundamental frequency (point 7) shown on the trace.

Site: SIP-AC3	Test Date: 2021/10/30
Limit: FCC_Part15.209_RE(3m)	Engineer: White Wang
Probe: SIP-AC3_VULB 9168 _30-1000MHz	Polarity: Vertical
EUT: MINI RF UHF MODULE SiLABS	Power: 3.3Vdc
Note: Test Mode 1	



No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV/m)	Factor (dB/m)	Type
1			30.970	33.686	17.159	-6.314	40.000	16.527	PK
2			35.820	35.938	18.619	-4.062	40.000	17.319	PK
3			57.645	29.997	12.512	-10.003	40.000	17.485	PK
4			120.210	31.298	15.430	-12.202	43.500	15.868	PK
5			235.640	33.609	17.283	-12.391	46.000	16.326	PK
6			824.915	34.999	6.447	-11.001	46.000	28.552	PK
7	X	*	902.515	105.980	76.658	N/A	46.000	29.322	PK

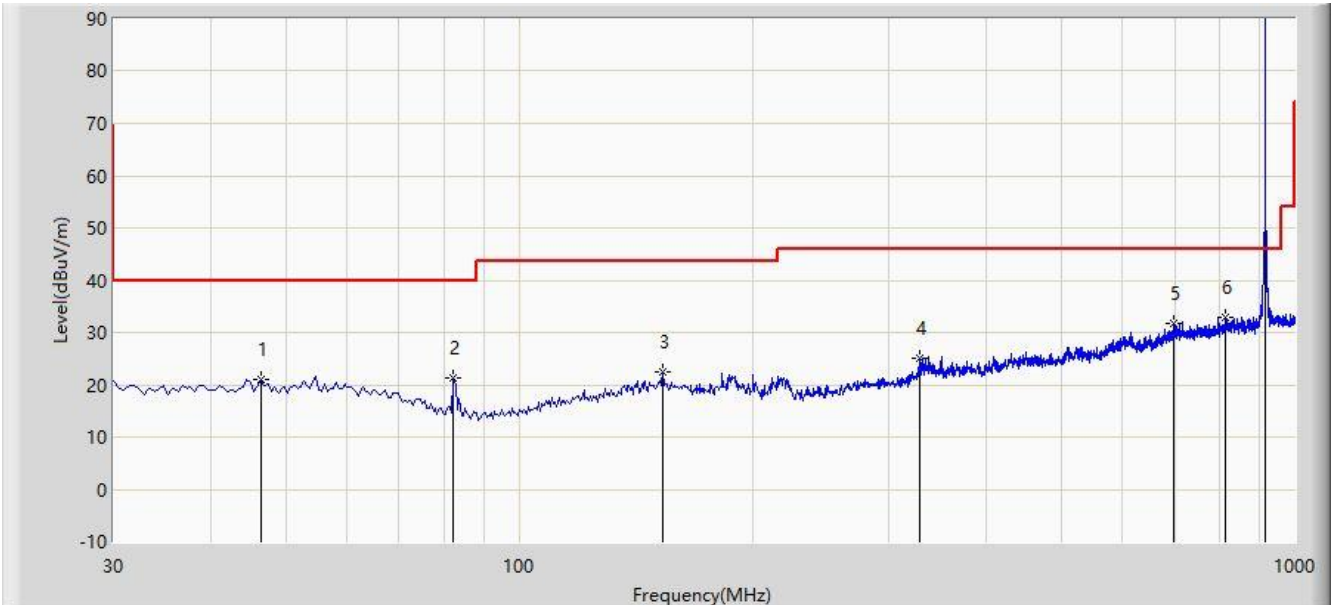
Note 1: Measure Level (dBuV/m) = Reading Level (dBuV) + Factor (dB/m)

Factor (dB/m) = Cable Loss (dB) + Antenna Factor (dB/m)

Note 2: 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 3: "*" During the radiated emission testing, there was fundamental frequency (point 7) shown on the trace.

Site: SIP-AC1	Test Date: 2021/11/30
Limit: FCC_Part15.209_RE(3m)	Engineer: Edward Zhang
Probe: SIP-AC1_VULB 9168 _30-1000MHz	Polarity: Horizontal
EUT: MINI RF UHF MODULE SiLABS	Power: 3.3Vdc
Note: Test Mode 3	



No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV/m)	Factor (dB/m)	Type
1			46.490	20.981	-0.079	-19.019	40.000	21.060	PK
2			82.380	21.265	5.239	-18.735	40.000	16.026	PK
3			153.190	22.430	1.269	-21.070	43.500	21.161	PK
4			328.275	24.946	3.323	-21.054	46.000	21.623	PK
5			699.300	31.612	2.743	-14.388	46.000	28.869	PK
6			814.245	32.790	2.110	-13.210	46.000	30.680	PK
7	X	*	916.000	106.583	75.305	N/A	N/A	31.278	PK

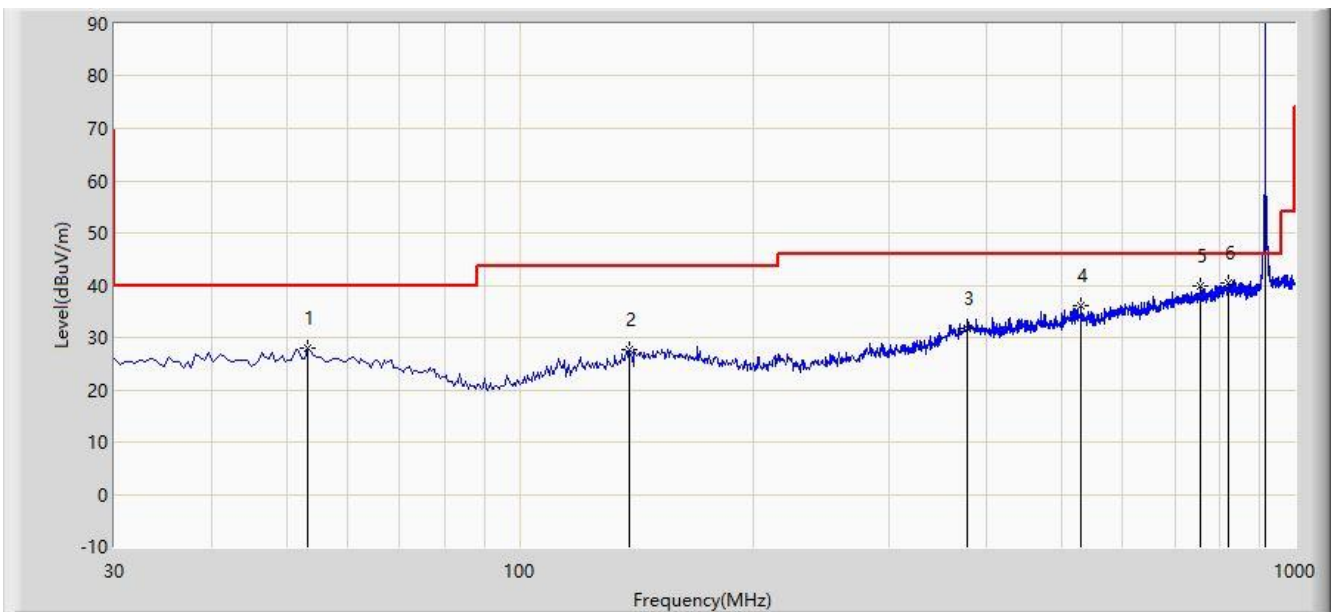
Note 1: Measure Level (dB μ V/m) = Reading Level (dB μ V) + Factor (dB/m)

Factor (dB/m) = Cable Loss (dB) + Antenna Factor (dB/m)

Note 2: 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 3: “*” During the radiated emission testing, there was fundamental frequency (point 7) shown on the trace.

Site: SIP-AC1	Test Date: 2021/11/30
Limit: FCC_Part15.209_RE(3m)	Engineer: Edward Zhang
Probe: SIP-AC1_VULB 9168 _30-1000MHz	Polarity: Vertical
EUT: MINI RF UHF MODULE SiLABS	Power: 3.3Vdc
Note: Test Mode 3	



No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV/m)	Factor (dB/m)	Type
1			53.280	28.085	10.139	-11.915	40.000	17.946	PK
2			138.640	27.744	10.308	-15.756	43.500	17.436	PK
3			377.260	31.862	11.599	-14.138	46.000	20.263	PK
4			529.065	36.137	12.372	-9.863	46.000	23.766	PK
5			756.530	39.875	12.006	-6.125	46.000	27.869	PK
6			822.490	40.488	11.546	-5.512	46.000	28.942	PK
7	X	*	916.000	115.299	85.803	69.299	46.000	29.497	PK

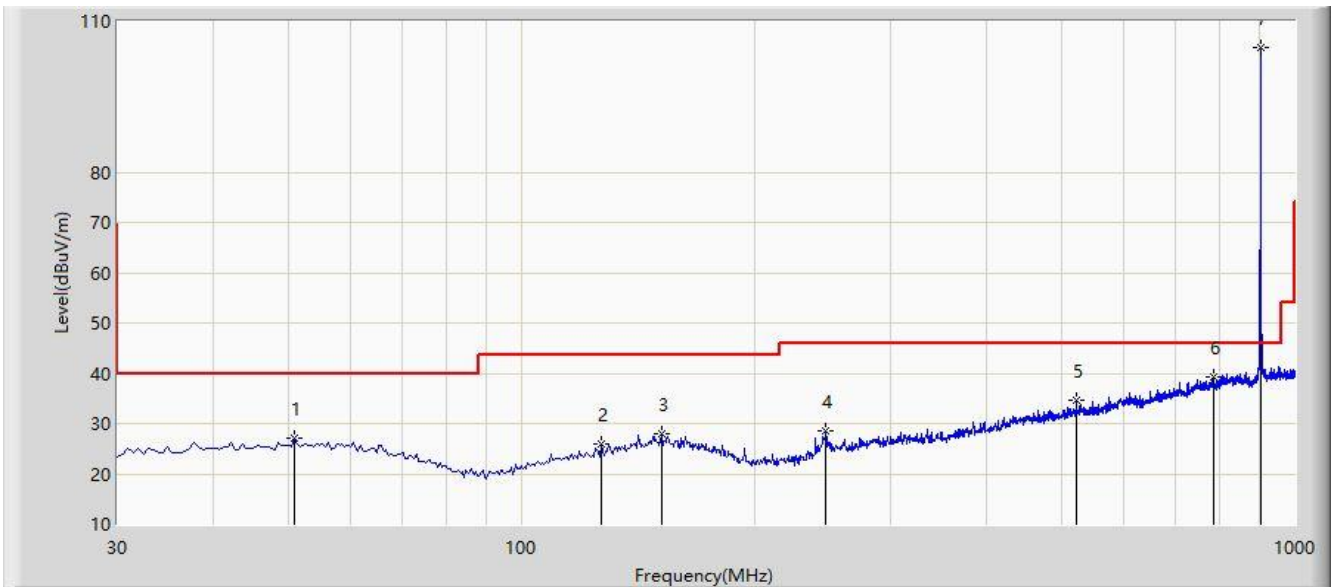
Note 1: Measure Level (dBuV/m) = Reading Level (dBuV) + Factor (dB/m)

Factor (dB/m) = Cable Loss (dB) + Antenna Factor (dB/m)

Note 2: 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 3: "*" During the radiated emission testing, there was fundamental frequency (point 7) shown on the trace.

Site: SIP-AC1	Test Date: 2022/03/07
Limit: FCC_Part15.209_RE(3m)	Engineer: Kyrie Xie
Probe: SIP-AC1_VULB 9168 _30-1000MHz	Polarity: Horizontal
EUT: MINI RF UHF MODULE SiLABS	Power: 3.3Vdc
Note: Mode 6	



No	Flag	Mark	Frequency (MHz)	Measure Level (dB μ V/m)	Reading Level (dB μ V)	Margin (dB)	Limit (dB μ V/m)	Factor (dB/m)	Type
1			50.855	27.015	9.100	-12.985	40.000	17.916	PK
2			126.515	26.002	9.926	-17.498	43.500	16.077	PK
3			151.735	27.855	9.599	-15.645	43.500	18.256	PK
4			247.280	28.597	12.235	-17.403	46.000	16.362	PK
5			521.790	34.518	10.681	-11.482	46.000	23.837	PK
6			785.630	39.350	11.349	-6.650	46.000	28.001	PK
7	X	*	903.000	104.703	75.793	58.703	46.000	28.910	PK

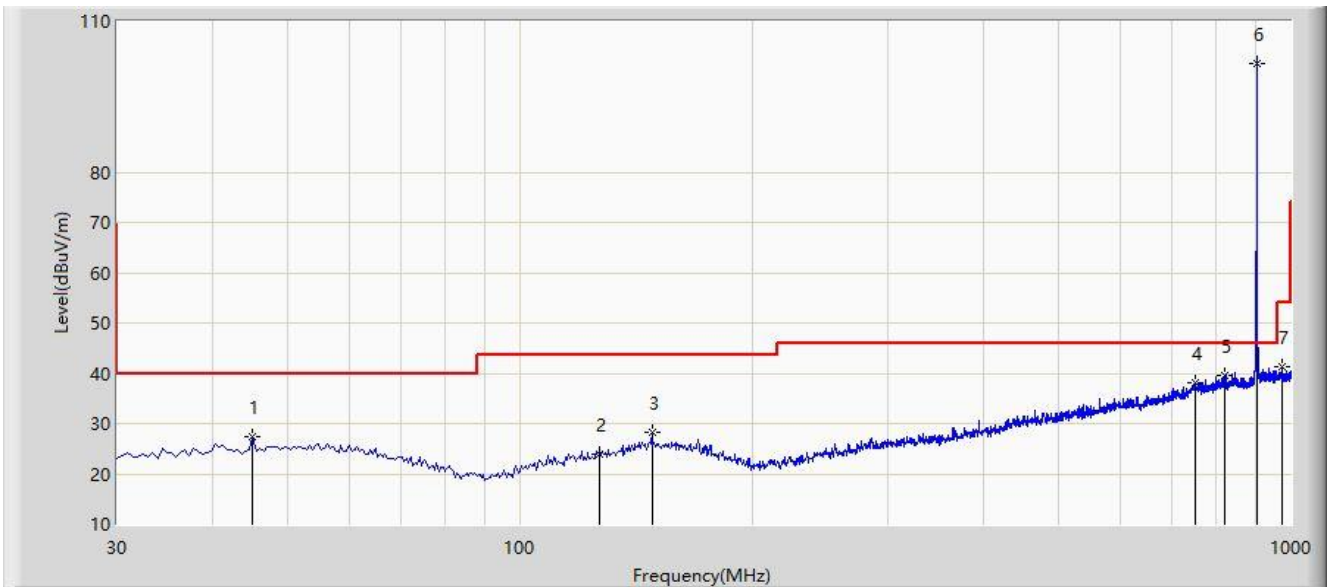
Note 1: Measure Level (dB μ V/m) = Reading Level (dB μ V) + Factor (dB/m)

Factor (dB/m) = Cable Loss (dB) + Antenna Factor (dB/m)

Note 2: 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 3: "*" During the radiated emission testing, there was fundamental frequency (point 7) shown on the trace.

Site: SIP-AC1	Test Date: 2022/03/07
Limit: FCC_Part15.209_RE(3m)	Engineer: Kyrie Xie
Probe: SIP-AC1_VULB 9168 _30-1000MHz	Polarity: Vertical
EUT: MINI RF UHF MODULE SiLABS	Power: 3.3Vdc
Note: Mode 6	



No	Flag	Mark	Frequency (MHz)	Measure Level (dBμV/m)	Reading Level (dBμV)	Margin (dB)	Limit (dBμV/m)	Factor (dB/m)	Type
1			45.035	27.379	9.675	-12.621	40.000	17.705	PK
2			126.515	23.897	7.821	-19.603	43.500	16.077	PK
3			148.340	28.141	9.941	-15.359	43.500	18.200	PK
4			752.165	38.100	10.231	-7.900	46.000	27.869	PK
5			822.005	39.681	10.763	-6.319	46.000	28.917	PK
6	X	*	902.515	101.455	72.535	55.455	46.000	28.919	PK
7			972.355	41.225	11.104	-12.775	54.000	30.121	PK

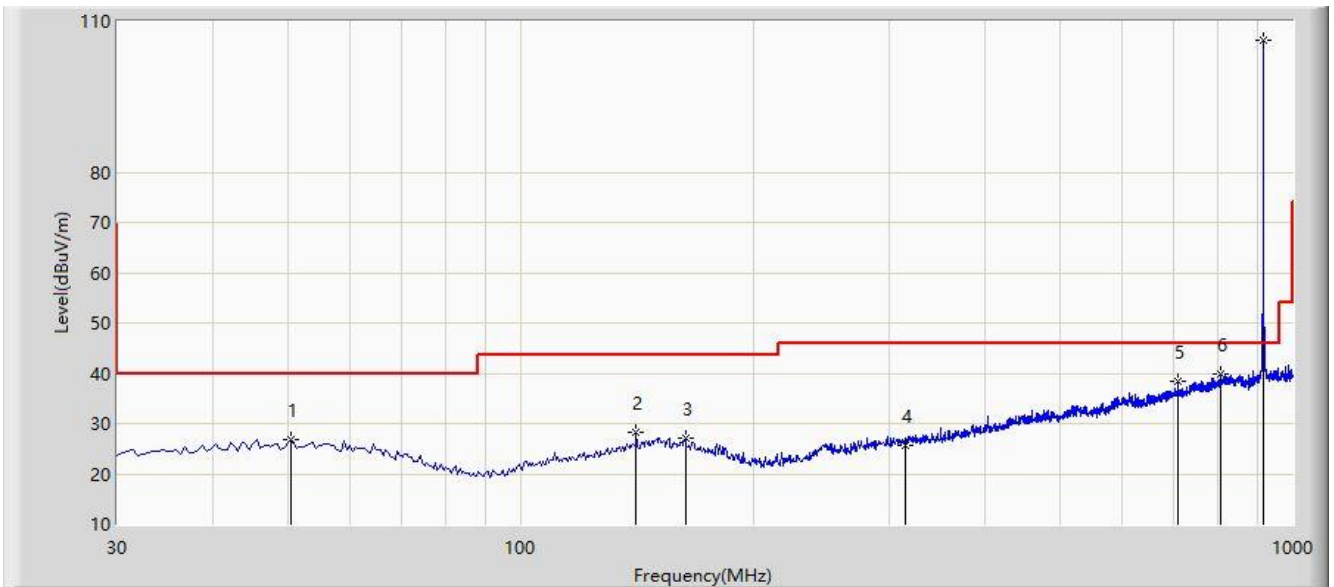
Note 1: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB/m)

Factor (dB/m) = Cable Loss (dB) + Antenna Factor (dB/m)

Note 2: 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 3: "*" During the radiated emission testing, there was fundamental frequency (point 6) shown on the trace.

Site: SIP-AC1	Test Date: 2022/03/07
Limit: FCC_Part15.209_RE(3m)	Engineer: Kyrie Xie
Probe: SIP-AC1_VULB 9168 _30-1000MHz	Polarity: Horizontal
EUT: MINI RF UHF MODULE SILABS	Power: 3.3Vdc
Note: Mode 8	



No	Flag	Mark	Frequency (MHz)	Measure Level (dBμV/m)	Reading Level (dBμV)	Margin (dB)	Limit (dBμV/m)	Factor (dB/m)	Type
1			50.370	26.688	8.745	-13.312	40.000	17.943	PK
2			141.065	28.203	10.521	-15.297	43.500	17.682	PK
3			163.375	26.964	9.237	-16.536	43.500	17.727	PK
4			315.180	25.637	6.749	-20.363	46.000	18.888	PK
5			709.970	38.531	11.568	-7.469	46.000	26.963	PK
6			807.940	39.780	11.012	-6.220	46.000	28.768	PK
7	X	*	916.095	106.124	76.622	60.124	46.000	29.502	PK

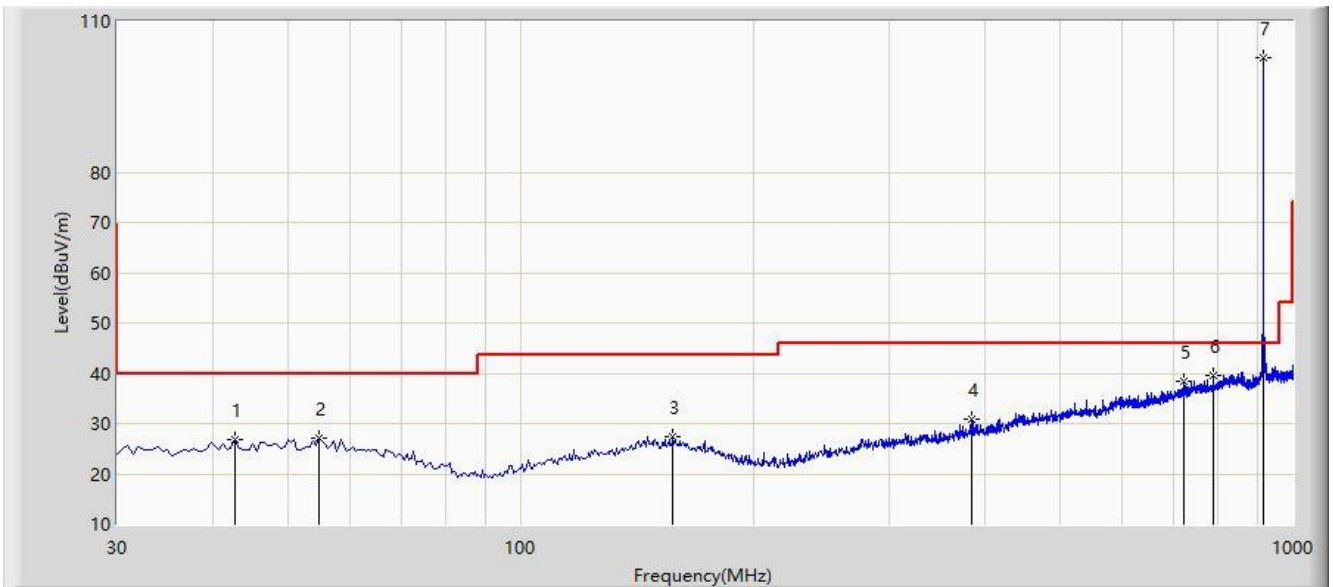
Note 1: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB/m)

Factor (dB/m) = Cable Loss (dB) + Antenna Factor (dB/m)

Note 2: 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 3: "*" During the radiated emission testing, there was fundamental frequency (point 7) shown on the trace.

Site: SIP-AC1	Test Date: 2022/03/07
Limit: FCC_Part15.209_RE(3m)	Engineer: Kyrie Xie
Probe: SIP-AC1_VULB 9168 _30-1000MHz	Polarity: Vertical
EUT: MINI RF UHF MODULE SILABS	Power: 3.3Vdc
Note: Mode 8	



No	Flag	Mark	Frequency (MHz)	Measure Level (dB μ V/m)	Reading Level (dB μ V)	Margin (dB)	Limit (dB μ V/m)	Factor (dB/m)	Type
1			42.610	26.825	9.222	-13.175	40.000	17.603	PK
2			54.735	27.137	9.248	-12.863	40.000	17.889	PK
3			157.555	27.432	9.367	-16.068	43.500	18.065	PK
4			383.080	30.893	10.520	-15.107	46.000	20.373	PK
5			723.550	38.296	11.409	-7.704	46.000	26.887	PK
6			788.540	39.421	11.422	-6.579	46.000	27.999	PK
7	X	*	916.095	102.807	73.305	56.807	46.000	29.502	PK

Note 1: Measure Level (dB μ V/m) = Reading Level (dB μ V) + Factor (dB/m)

Factor (dB/m) = Cable Loss (dB) + Antenna Factor (dB/m)

Note 2: 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 3: "*" During the radiated emission testing, there was fundamental frequency (point 7) shown on the trace.

6.7. Radiated Restricted Band Edge Measurement

6.7.1. Test Limit

For 15.205 requirement:

Radiated emissions which fall in the restricted bands, as defined in Section 15.205(a) of FCC part 15, must also comply with the radiated emission limits specified in Section 15.209(a).

Frequency (MHz)	Frequency (MHz)	Frequency (MHz)	Frequency (GHz)
0.090 - 0.110	16.42 - 16.423	399.9 - 410	4.5 - 5.15
¹ 0.495 - 0.505	16.69475 - 16.69525	608 - 614	5.35 - 5.46
2.1735 - 2.1905	16.80425 - 16.80475	960 - 1240	7.25 - 7.75
4.125 - 4.128	25.5 - 25.67	1300 - 1427	8.025 - 8.5
4.17725 - 4.17775	37.5 - 38.25	1435 - 1626.5	9.0 - 9.2
4.20725 - 4.20775	73 - 74.6	1645.5 - 1646.5	9.3 - 9.5
6.215 - 6.218	74.8 - 75.2	1660 - 1710	10.6 - 12.7
6.26775 - 6.26825	108 - 121.94	1718.8 - 1722.2	13.25 - 13.4
6.31175 - 6.31225	123 - 138	2200 - 2300	14.47 - 14.5
8.291 - 8.294	149.9 - 150.05	2310 - 2390	15.35 - 16.2
8.362 - 8.366	156.52475 - 156.52525	2483.5 - 2500	17.7 - 21.4
8.37625 - 8.38675	156.7 - 156.9	2690 - 2900	22.01 - 23.12
8.41425 - 8.41475	162.0125 - 167.17	3260 - 3267	23.6 - 24.0
12.29 - 12.293	167.72 - 173.2	3332 - 3339	31.2 - 31.8
12.51975 - 12.52025	240 - 285	3345.8 - 3358	36.43 - 36.5
12.57675 - 12.57725	322 - 335.4	3600 - 4400	(²)
13.36 - 13.41	--	--	--

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

FCC Part 15 Subpart C Paragraph 15.209		
Frequency [MHz]	Field Strength [μ 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

For RSS-Gen Section 8.10 Requirement

Radiated emissions which fall in the restricted bands, as defined in Section 8.10 of RSS-Gen, must also comply with the radiated emission limits specified in Section 8.9.

Frequency (MHz)	Frequency (MHz)	Frequency (GHz)
0.090 - 0.110	149.9 - 150.05	9.0 - 9.2
0.495 - 0.505	156.52475 - 156.525225	9.3 - 9.5
2.1735 - 2.1905	156.7 - 156.9	10.6 - 12.7
3.020 - 3.026	162.0125 - 167.17	13.25 - 13.4
4.125 - 4.128	167.72 - 173.2	14.47 - 14.5
4.17725 - 4.17775	240 - 285	15.35 - 16.2
4.20725 - 4.20775	322 - 335.4	17.7 - 21.4
5.677 - 5.683	399.9 - 410	22.01 - 23.12
6.215 - 6.218	608 - 614	23.6 - 24.0
6.26775 - 6.26825	960 - 1427	31.2 - 31.8
6.31175 - 6.31225	1435 - 1626.5	36.43 - 36.5
8.291 - 8.294	1645.5 - 1646.5	Above 38.6
8.362 - 8.366	1660 - 1710	--
8.37625 - 8.38675	1718.8 - 1722.2	
8.41425 - 8.41475	2200 - 2300	
12.29 - 12.293	2310 - 2390	
12.51975 - 12.52025	2483.5 - 2500	
12.57675 - 12.57725	2655 - 2900	
13.36 - 13.41	3260 - 3267	
16.42 - 16.423	3332 - 3339	
16.69475 - 16.69525	3345.8 - 3358	
16.80425 - 16.80475	3500 - 4400	
25.5 - 25.67	4500 - 5150	
37.5 - 38.25	5350 - 5460	
73 - 74.6	7250 - 7750	
74.8 - 75.2	8025 - 8500	
108 - 138	--	

All out of band emissions appearing in a restricted band as specified in Section 8.10 of the RSS-Gen must not exceed the limits shown in Table per Section 8.9.

RSS-Gen Section 8.9			
Frequency [MHz]	Magnetic field strength (H-Field) [$\mu\text{A}/\text{m}$]	Field Strength [$\mu\text{V}/\text{m}$]	Measured Distance [Meters]
0.009 - 0.490	6.37/F(F in kHz)	--	300
0.490 - 1.705	63.7/F(F in kHz)	--	30
1.705 - 30	0.08	--	30
30 - 88	--	100	3
88 - 216	--	150	3
216 - 960	--	200	3
Above 960	--	500	3

6.7.2. Test Procedure Used

ANSI C63.10-2013 Section 6.3

ANSI C63.10-2013 Section 6.6

ANSI C63.10-2013 Section 6.10

6.7.3. Test Setting

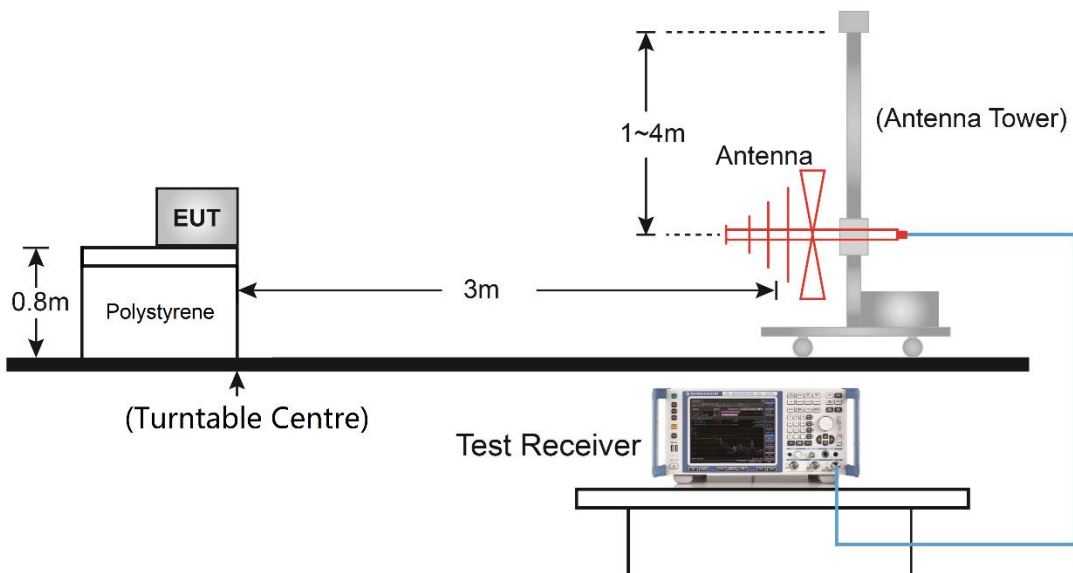
Peak Field Strength Measurements

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

Average Field Strength Measurements

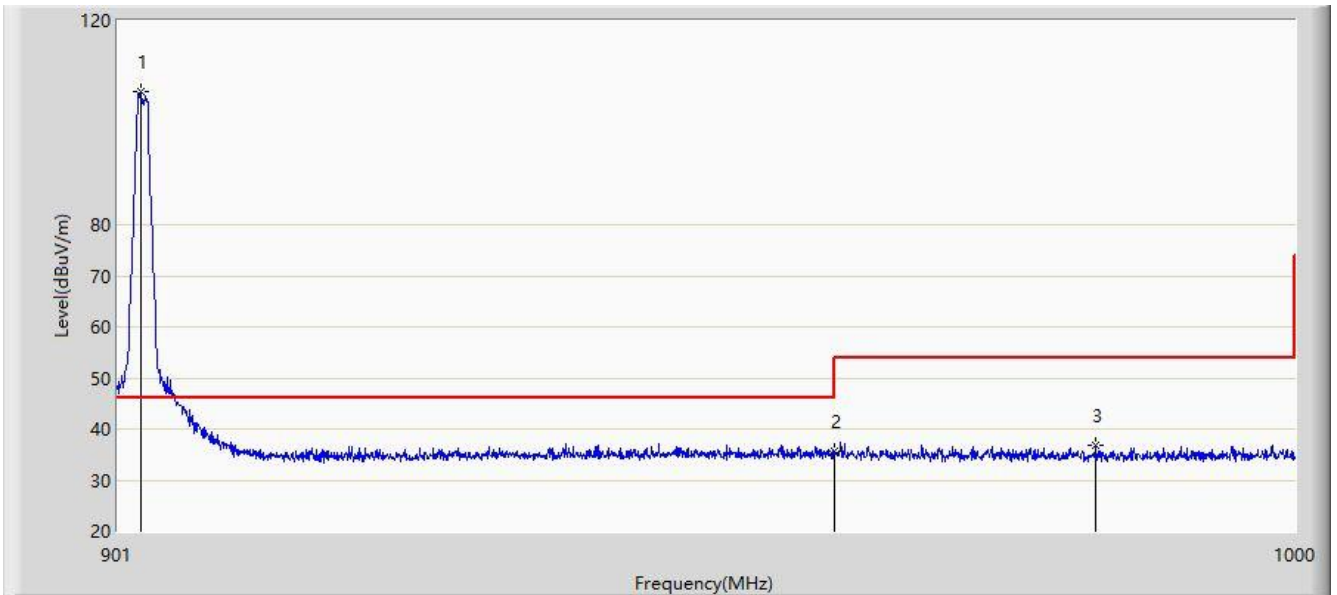
1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest
2. RBW = 1MHz
3. VBW $\geq 1/T$
4. De As an alternative, the instrument may be set to linear detector mode. Ensure that video filtering is applied in linear voltage domain (rather than in a log or dB domain).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

6.7.4. Test Setup



6.7.5. Test Result

Site: SIP-AC3	Test Date: 2021/10/30
Limit: FCC_Part15.209_RE(3m)	Engineer: White Wang
Probe: SIP-AC3_VULB 9168 _30-1000MHz	Polarity: Horizontal
EUT: MINI RF UHF MODULE SiLABS	Power: 3.3Vdc
Note: Mode 1	

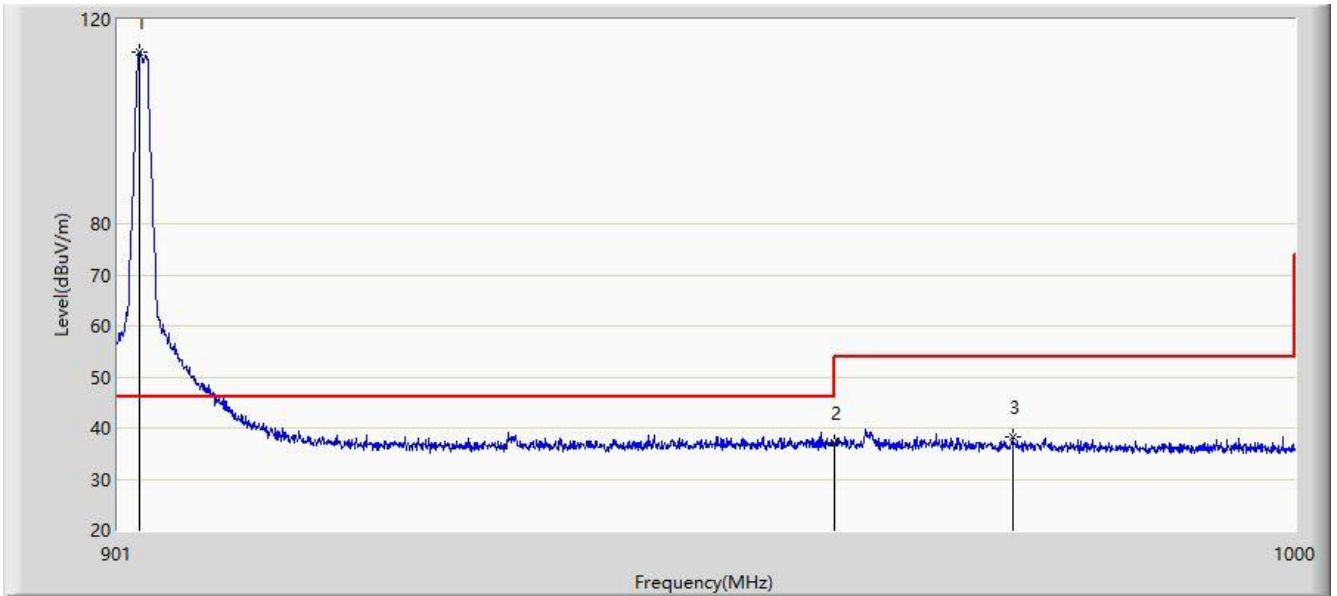


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV/m)	Factor (dB/m)	Type
1	X	*	902.831	105.950	76.621	N/A	N/A	29.329	PK
2			960.000	35.688	5.629	-10.312	46.000	30.059	PK
3			982.526	36.933	7.123	-17.067	54.000	29.810	PK

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

Factor (dB/m) = Cable Loss (dB) + Antenna Factor (dB/m)

Site: SIP-AC3	Test Date: 2021/10/30
Limit: FCC_Part15.209_RE(3m)	Engineer: White Wang
Probe: SIP-AC3_VULB 9168 _30-1000MHz	Polarity: Vertical
EUT: MINI RF UHF MODULE SiLABS	Power: 3.3Vdc
Note: Mode 1	

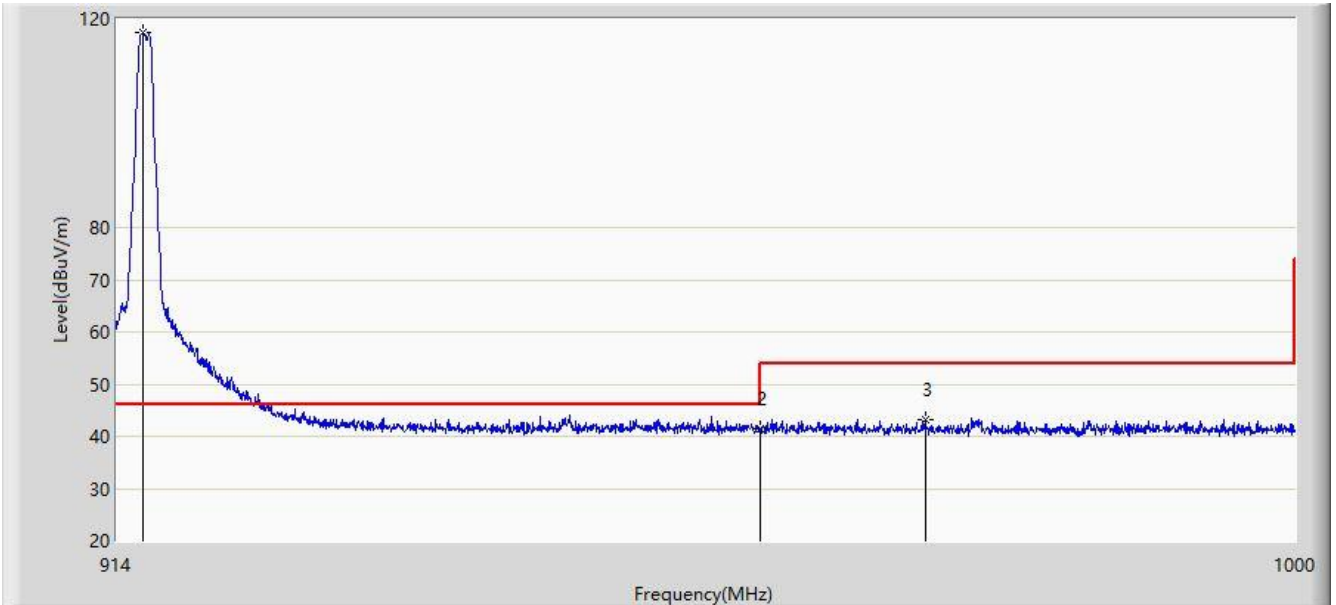


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV/m)	Factor (dB/m)	Type
1	X	*	902.782	113.758	84.430	N/A	N/A	29.328	PK
2			960.000	37.028	6.969	-8.972	46.000	30.059	PK
3			975.349	38.279	8.375	-15.721	54.000	29.904	PK

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

Factor (dB/m) = Cable Loss (dB) + Antenna Factor (dB/m)

Site: SIP-AC1	Test Date: 2021/11/18
Limit: FCC_Part15.209_RE(3m)	Engineer: Edward Zhang
Probe: SIP-AC1_VULB 9168 _30-1000MHz	Polarity: Vertical
EUT: MINI RF UHF MODULE SiLABS	Power: 3.3Vdc
Note: Mode 3	

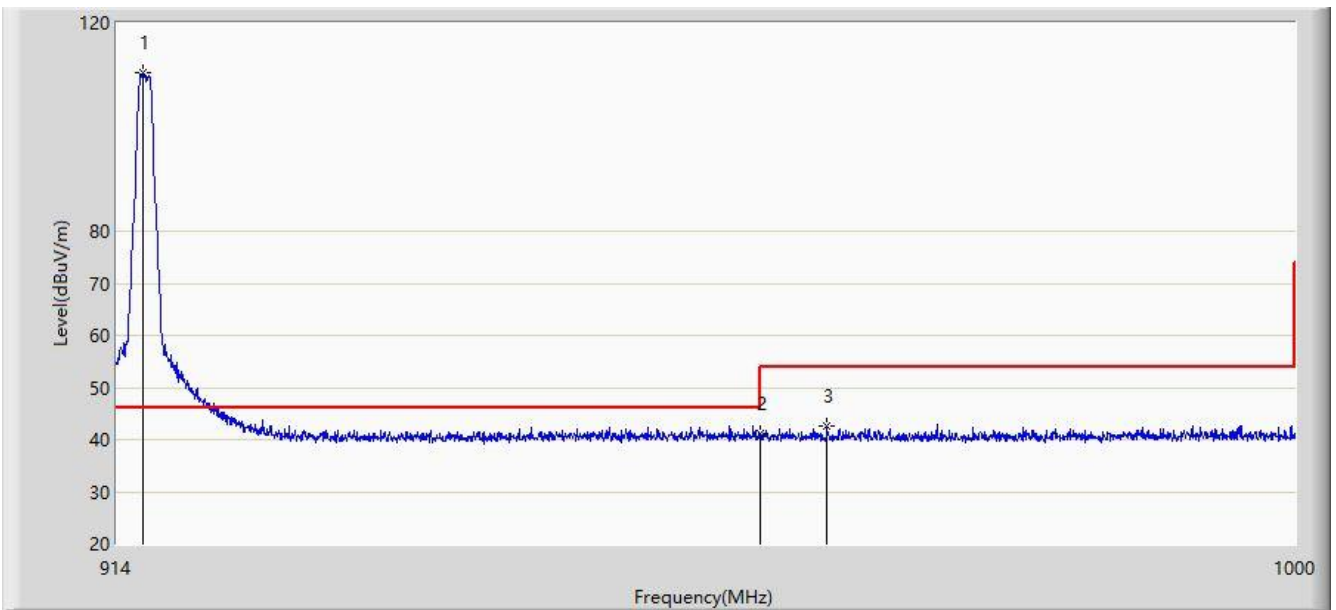


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV/m)	Factor (dB/m)	Type
1	X	*	915.892	117.425	88.229	N/A	N/A	29.196	PK
2			960.000	41.400	11.638	-4.600	46.000	29.761	PK
3			972.179	43.202	13.531	-10.798	54.000	29.671	PK

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

Factor (dB/m) = Cable Loss (dB) + Antenna Factor (dB/m)

Site: SIP-AC1	Test Date: 2021/11/18
Limit: FCC_Part15.209_RE(3m)	Engineer: Edward Zhang
Probe: SIP-AC1_VULB 9168 _30-1000MHz	Polarity: Horizontal
EUT: MINI RF UHF MODULE SiLABS	Power: 3.3Vdc
Note: Mode 3	

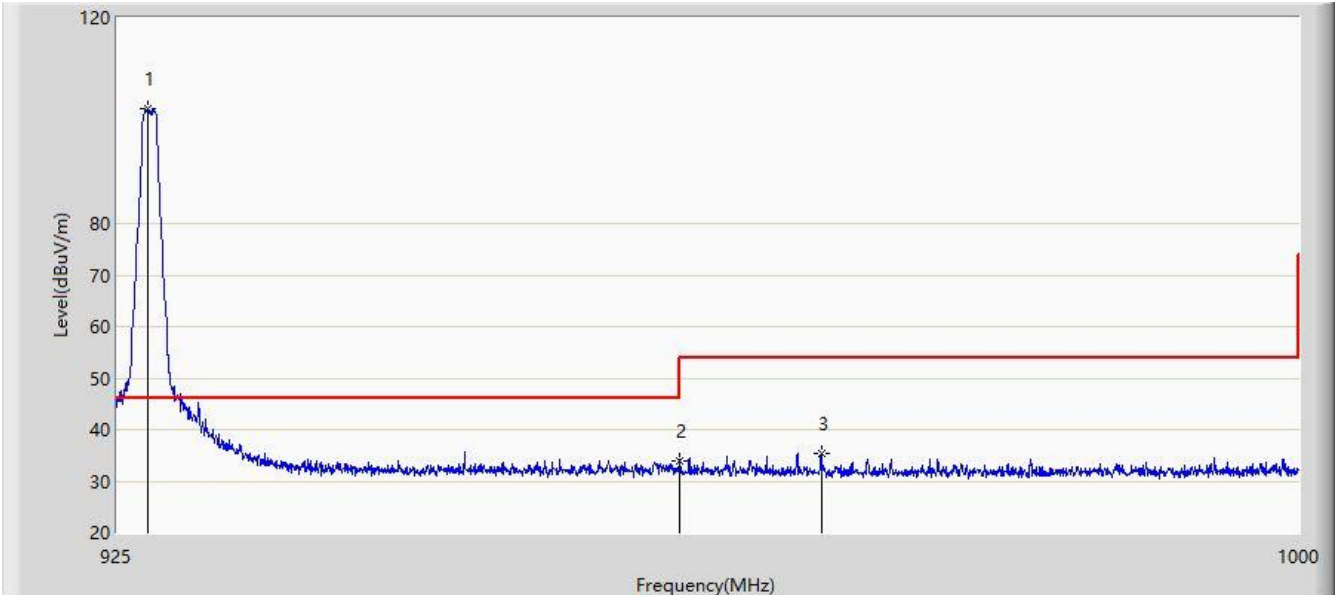


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV/m)	Factor (dB/m)	Type
1	X	*	915.892	110.299	81.103	N/A	N/A	29.196	PK
2			960.000	41.274	11.512	-4.726	46.000	29.761	PK
3			964.955	42.673	12.948	-11.327	54.000	29.725	PK

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

Factor (dB/m) = Cable Loss (dB) + Antenna Factor (dB/m)

Site: SIP-AC3	Test Date: 2021/10/30
Limit: FCC_Part15.209_RE(3m)	Engineer: White Wang
Probe: SIP-AC3_VULB 9168 _30-1000MHz	Polarity: Horizontal
EUT: MINI RF UHF MODULE SiLABS	Power: 3.3Vdc
Note: Mode 5	

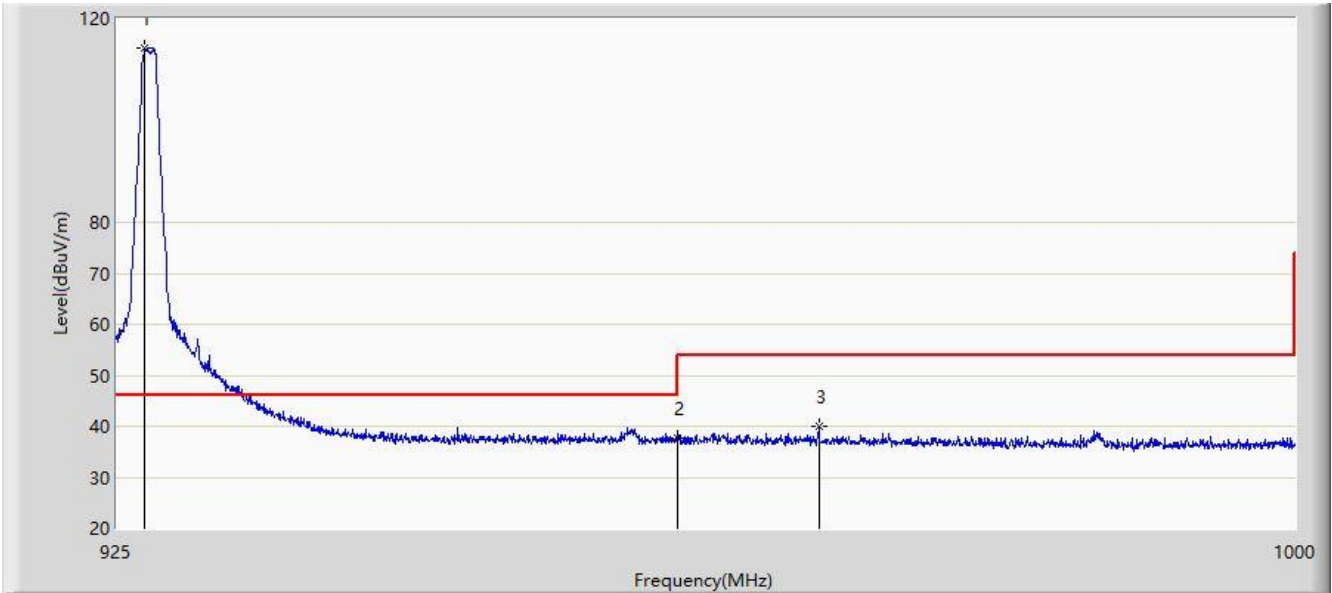


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV/m)	Factor (dB/m)	Type
1	X	*	926.875	102.436	72.526	N/A	N/A	29.911	PK
2			960.000	33.901	3.842	-12.099	46.000	30.059	PK
3			968.987	35.268	5.320	-18.732	54.000	29.948	PK

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

Factor (dB/m) = Cable Loss (dB) + Antenna Factor (dB/m)

Site: SIP-AC3	Test Date: 2021/10/30
Limit: FCC_Part15.209_RE(3m)	Engineer: White Wang
Probe: SIP-AC3_VULB 9168 _30-1000MHz	Polarity: Vertical
EUT: MINI RF UHF MODULE SiLABS	Power: 3.3Vdc
Note: Mode 5	

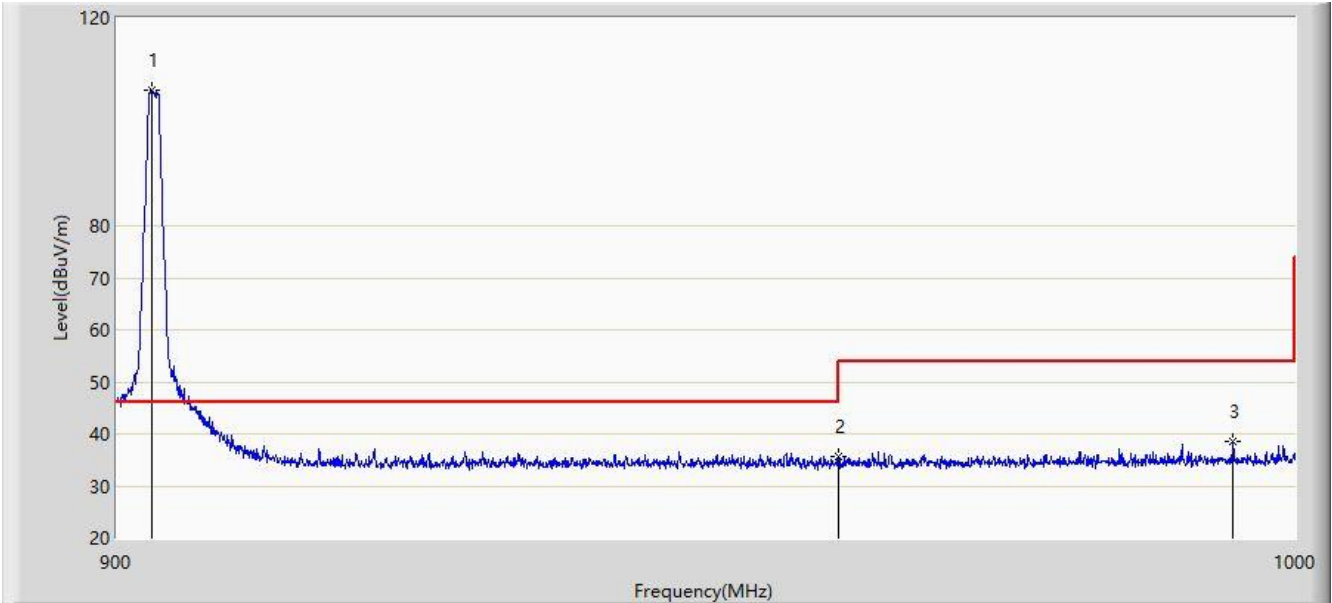


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV/m)	Factor (dB/m)	Type
1	X	*	926.725	114.222	84.315	N/A	N/A	29.907	PK
2			960.000	37.740	7.681	-8.260	46.000	30.059	PK
3			968.987	39.928	9.980	-14.072	54.000	29.948	PK

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

Factor (dB/m) = Cable Loss (dB) + Antenna Factor (dB/m)

Site: SIP-AC2	Test Date: 2022/03/08
Limit: FCC_Part15.209_RE(3m)	Engineer: Allen Zou
Probe: SIP-AC2_VULB 9168_30-1000MHz	Polarity: Horizontal
EUT: MINI RF UHF MODULE SILABS	Power: DC 3.3V
Note: Mode 6	

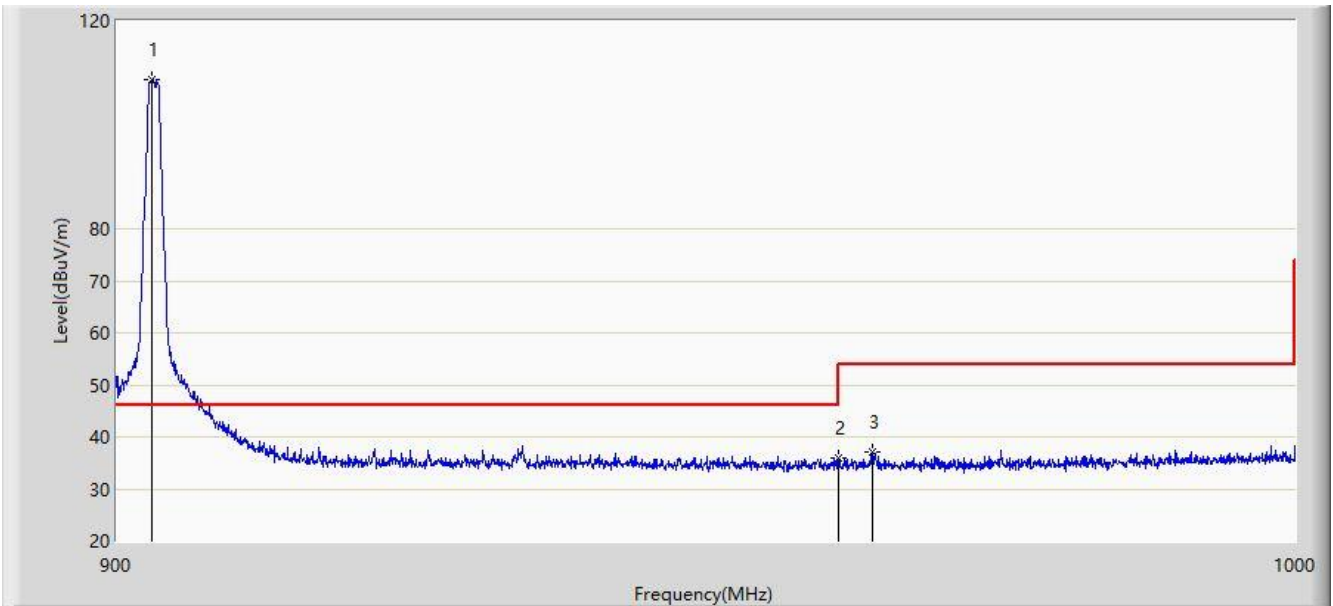


No	Flag	Mark	Frequency (MHz)	Measure Level (dB μ V/m)	Reading Level (dB μ V)	Margin (dB)	Limit (dB μ V/m)	Factor (dB/m)	Type
1	X	*	902.900	106.204	76.314	N/A	N/A	29.890	PK
2			960.000	35.643	5.055	-10.357	46.000	30.589	PK
3			994.500	38.425	7.269	-15.575	54.000	31.157	PK

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

Factor (dB/m) = Cable Loss (dB) + Antenna Factor (dB/m)

Site: SIP-AC2	Test Date: 2022/03/08
Limit: FCC_Part15.209_RE(3m)	Engineer: Allen Zou
Probe: SIP-AC2_VULB 9168_30-1000MHz	Polarity: Vertical
EUT: MINI RF UHF MODULE SILABS	Power: DC 3.3V
Note: Mode 6	

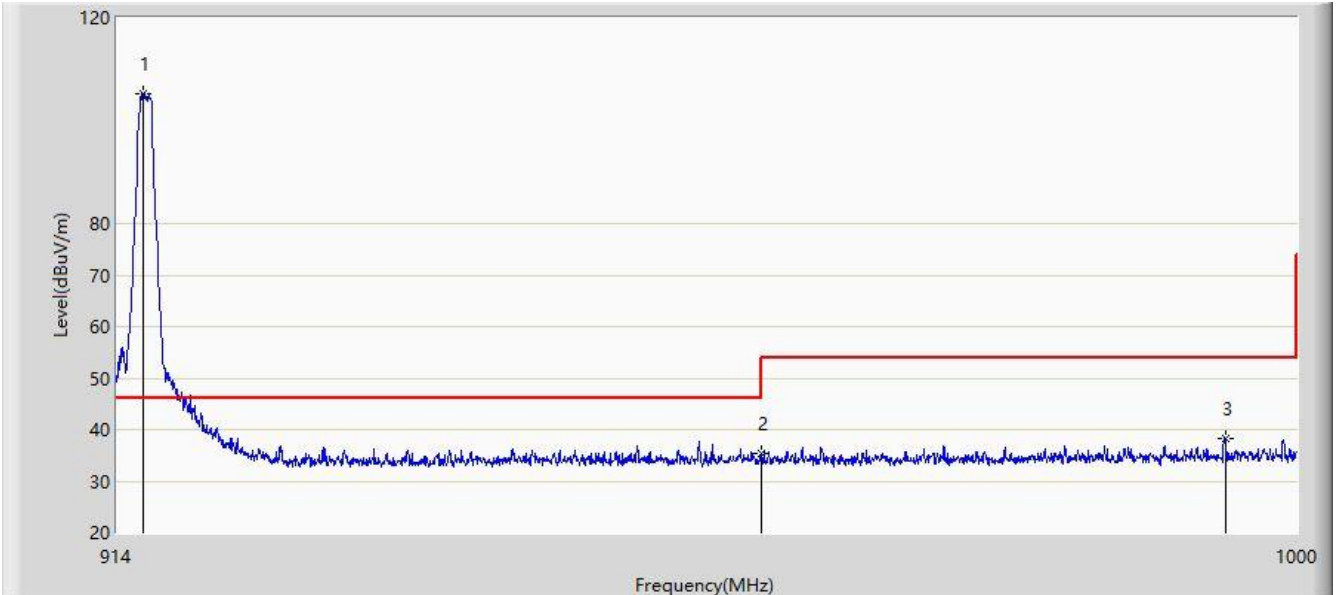


No	Flag	Mark	Frequency (MHz)	Measure Level (dB μ V/m)	Reading Level (dB μ V)	Margin (dB)	Limit (dB μ V/m)	Factor (dB/m)	Type
1	X	*	902.900	108.730	78.840	N/A	N/A	29.890	PK
2			960.000	35.831	5.243	-10.169	46.000	30.589	PK
3			963.000	37.128	6.497	-16.872	54.000	30.630	PK

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

Factor (dB/m) = Cable Loss (dB) + Antenna Factor (dB/m)

Site: SIP-AC2	Test Date: 2022/03/08
Limit: FCC_Part15.209_RE(3m)	Engineer: Allen Zou
Probe: SIP-AC2_VULB 9168_30-1000MHz	Polarity: Horizontal
EUT: MINI RF UHF MODULE SILABS	Power: DC 3.3V
Note: Mode 8	

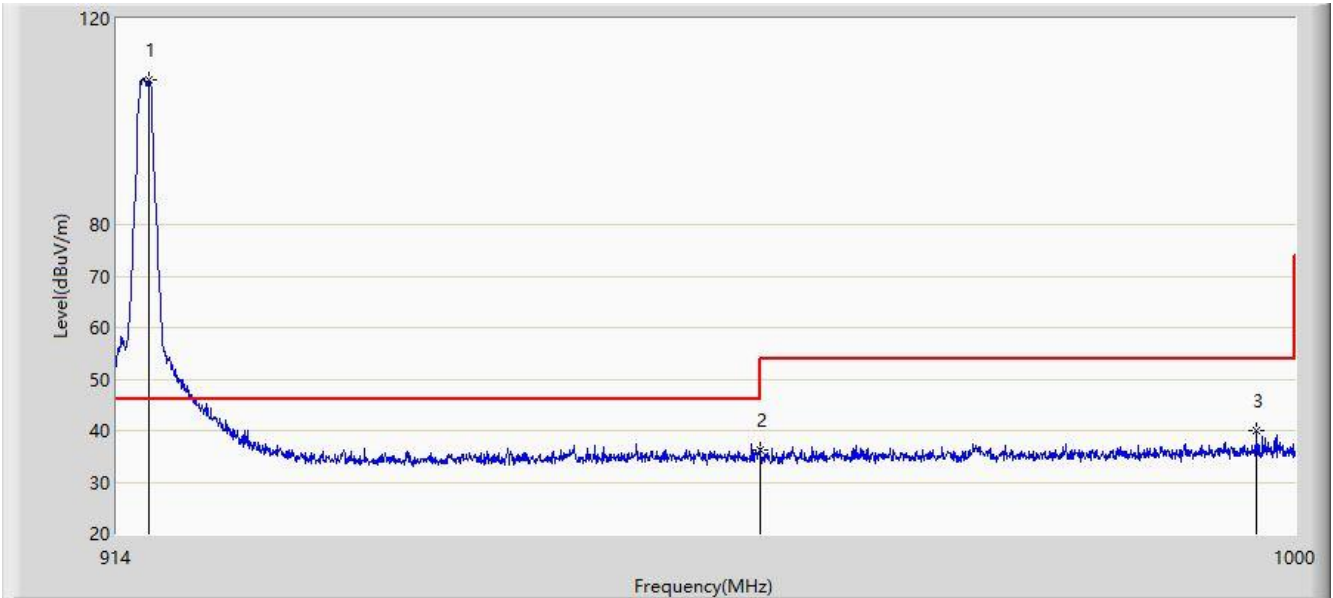


No	Flag	Mark	Frequency (MHz)	Measure Level (dB μ V/m)	Reading Level (dB μ V)	Margin (dB)	Limit (dB μ V/m)	Factor (dB/m)	Type
1	X	*	915.895	105.324	75.264	N/A	N/A	30.060	PK
2			960.000	35.389	4.801	-10.611	46.000	30.589	PK
3			994.555	38.180	7.023	-15.820	54.000	31.157	PK

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

Factor (dB/m) = Cable Loss (dB) + Antenna Factor (dB/m)

Site: SIP-AC2	Test Date: 2022/03/08
Limit: FCC_Part15.209_RE(3m)	Engineer: Allen Zou
Probe: SIP-AC2_VULB 9168_30-1000MHz	Polarity: Vertical
EUT: MINI RF UHF MODULE SILABS	Power: DC 3.3V
Note: Mode 8	

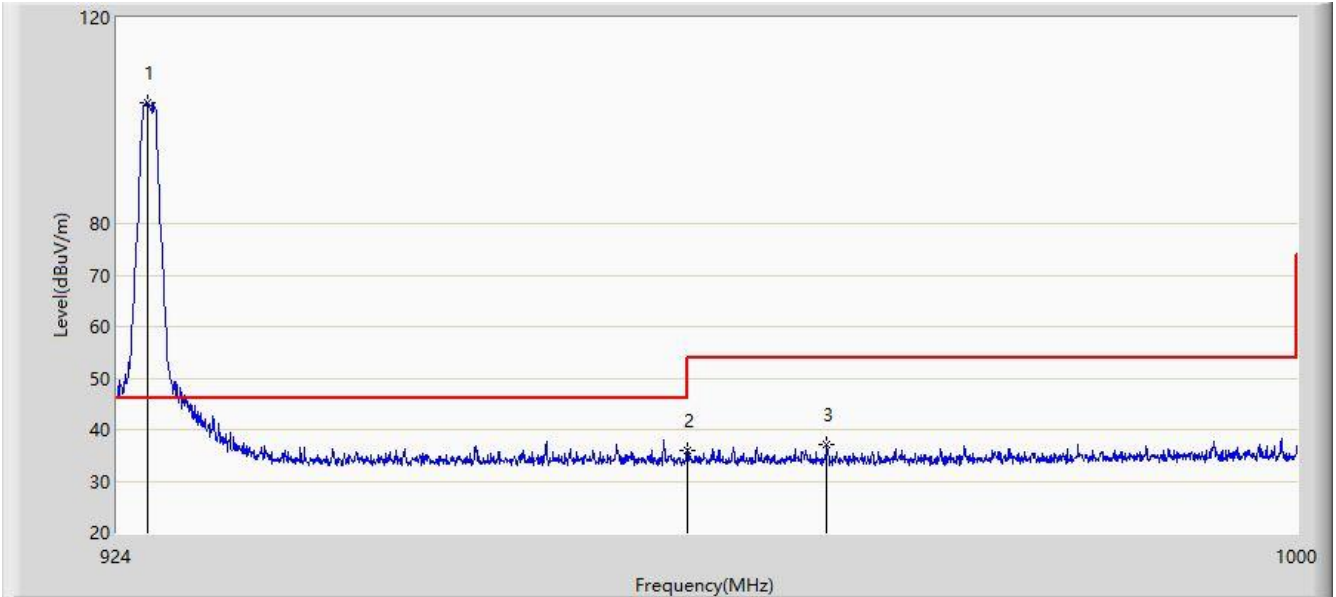


No	Flag	Mark	Frequency (MHz)	Measure Level (dB μ V/m)	Reading Level (dB μ V)	Margin (dB)	Limit (dB μ V/m)	Factor (dB/m)	Type
1	X	*	916.255	108.133	78.067	N/A	N/A	30.066	PK
2			960.000	36.258	5.670	-9.742	46.000	30.589	PK
3			997.120	39.984	8.792	-14.016	54.000	31.192	PK

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

Factor (dB/m) = Cable Loss (dB) + Antenna Factor (dB/m)

Site: SIP-AC2	Test Date: 2022/03/08
Limit: FCC_Part15.209_RE(3m)	Engineer: Allen Zou
Probe: SIP-AC2_VULB 9168_30-1000MHz	Polarity: Horizontal
EUT: MINI RF UHF MODULE SILABS	Power: DC 3.3V
Note: Mode 10	

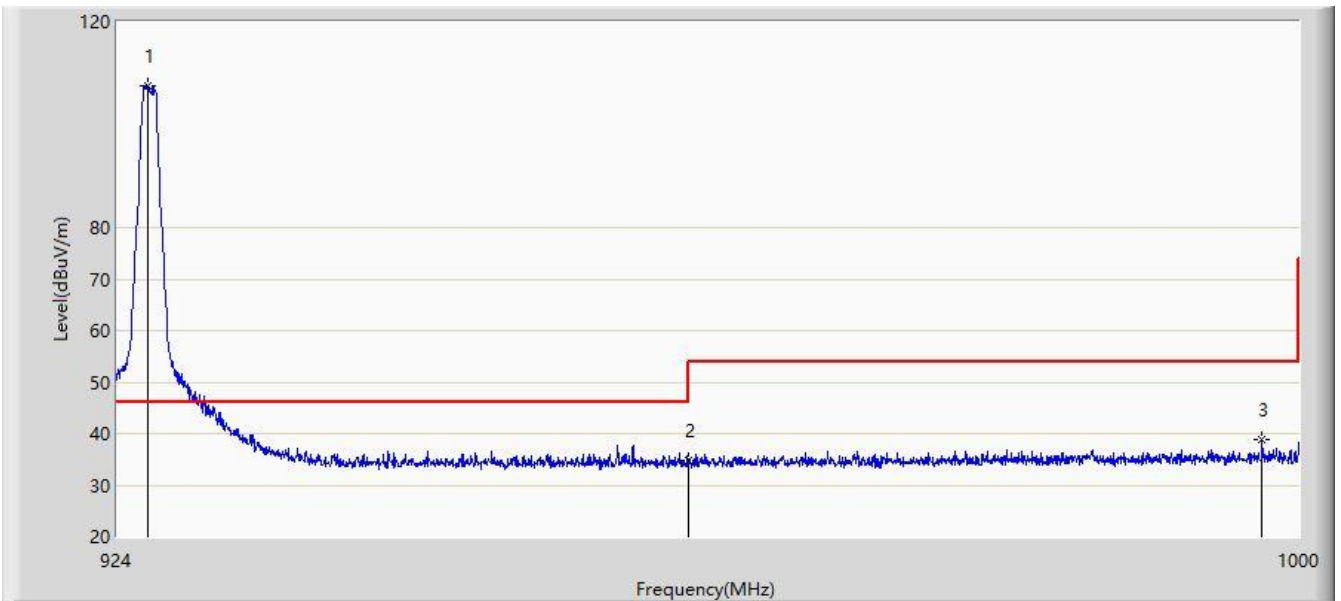


No	Flag	Mark	Frequency (MHz)	Measure Level (dB μ V/m)	Reading Level (dB μ V)	Margin (dB)	Limit (dB μ V/m)	Factor (dB/m)	Type
1	X	*	925.900	103.606	73.437	N/A	N/A	30.169	PK
2			960.000	36.071	5.483	-9.929	46.000	30.589	PK
3			969.030	37.087	6.338	-16.913	54.000	30.749	PK

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

Factor (dB/m) = Cable Loss (dB) + Antenna Factor (dB/m)

Site: SIP-AC2	Test Date: 2022/03/08
Limit: FCC_Part15.209_RE(3m)	Engineer: Allen Zou
Probe: SIP-AC2_VULB 9168_30-1000MHz	Polarity: Vertical
EUT: MINI RF UHF MODULE SILABS	Power: DC 3.3V
Note: Mode 10	



No	Flag	Mark	Frequency (MHz)	Measure Level (dB μ V/m)	Reading Level (dB μ V)	Margin (dB)	Limit (dB μ V/m)	Factor (dB/m)	Type
1	X	*	925.900	107.459	77.290	N/A	N/A	30.169	PK
2			960.000	34.794	4.206	-11.206	46.000	30.589	PK
3			997.530	38.894	7.702	-15.106	54.000	31.192	PK

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

Factor (dB/m) = Cable Loss (dB) + Antenna Factor (dB/m)

6.8. AC Conducted Emissions Measurement

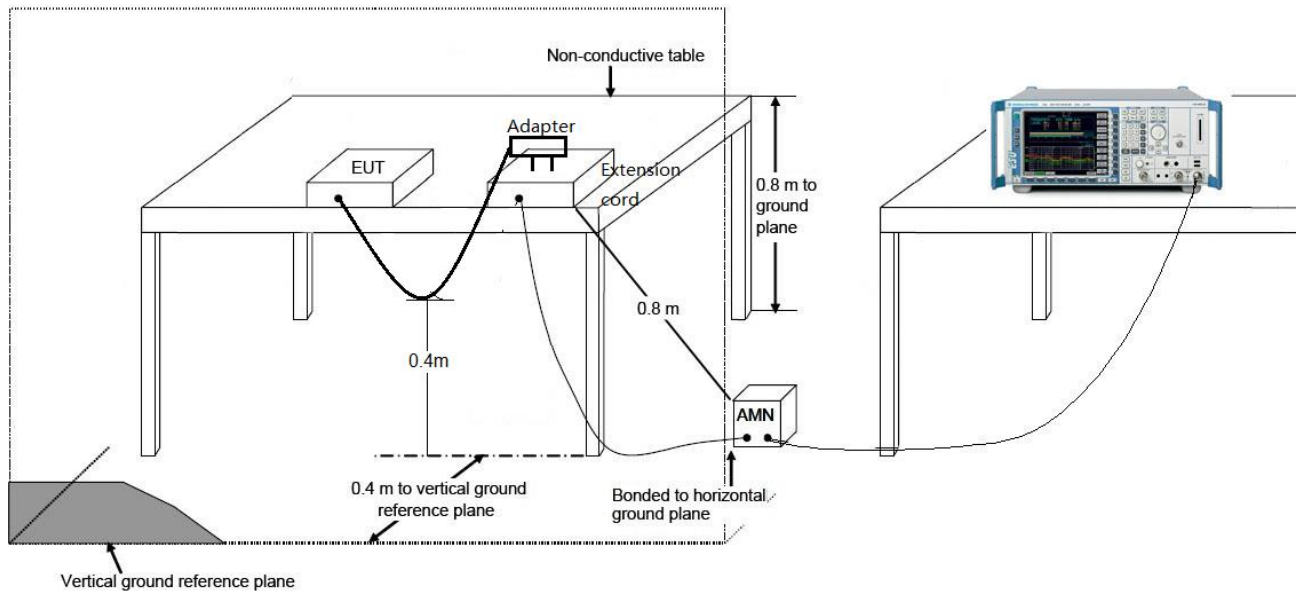
6.8.1. Test Limit

FCC Part 15.207 Limits / RSS-Gen Section 8.8		
Frequency (MHz)	QP (dB μ V)	AV (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.

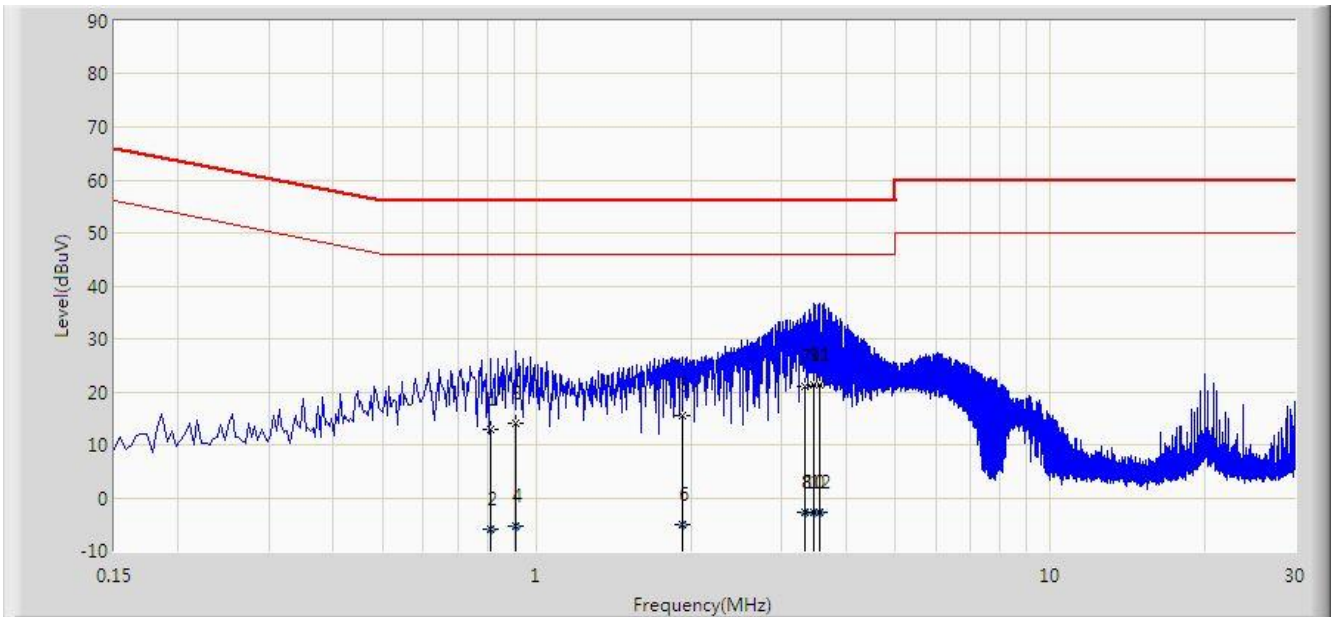
Note 2: The limit decreases linearly with the logarithm of the frequency in the range 0.15MHz to 0.5MHz.

6.8.2. Test Setup



6.8.3. Test Result

Site: SIP-SR2	Test Date: 2021/12/27
Temperature: 12.3°C	Humidity: 23.2%
Limit: FCC_Part15.207_CE_AC Power	Engineer: Barry Wu
Probe: SIP-SR2-ENV216_101684_C	Polarity: Line
EUT: MINI RF UHF MODULE SiLABS	Power: AC 120V/60Hz
Note: Transmit at channel 903MHz	

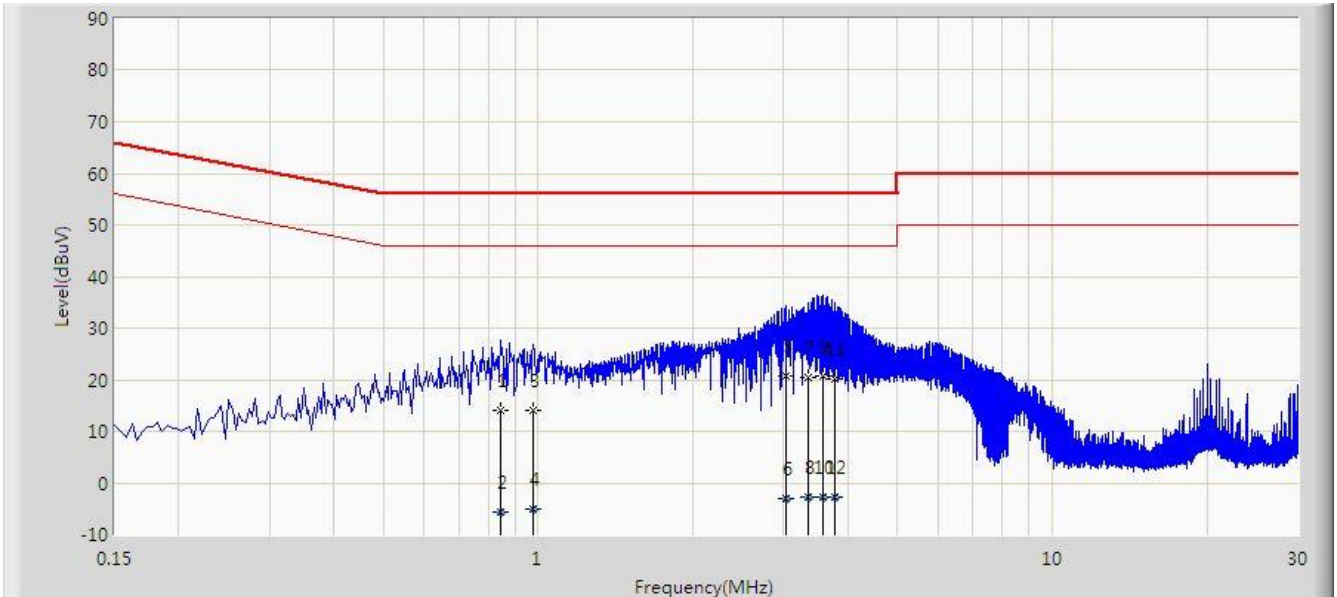


No	Flag	Mark	Frequency (MHz)	Measure Level (dBµV)	Reading Level (dBµV)	Margin (dB)	Limit (dBµV)	Factor (dB)	Type
1			0.810	12.865	3.146	-43.135	56.000	9.719	QP
2			0.810	-5.832	-15.551	-51.832	46.000	9.719	AV
3			0.910	13.943	4.233	-42.057	56.000	9.710	QP
4			0.910	-5.351	-15.061	-51.351	46.000	9.710	AV
5			1.918	15.392	5.644	-40.608	56.000	9.749	QP
6			1.918	-5.014	-14.763	-51.014	46.000	9.749	AV
7			3.330	20.979	11.172	-35.021	56.000	9.808	QP
8			3.330	-2.744	-12.551	-48.744	46.000	9.808	AV
9		*	3.462	21.316	11.491	-34.684	56.000	9.825	QP
10			3.462	-2.643	-12.468	-48.643	46.000	9.825	AV
11			3.558	21.205	11.378	-34.795	56.000	9.827	QP
12			3.558	-2.652	-12.479	-48.652	46.000	9.827	AV

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

Factor (dB/m) = Cable Loss (dB) + LISN Factor (dB/m)

Site: SIP-SR2	Test Date: 2021/12/27
Temperature: 12.3°C	Humidity: 23.2%
Limit: FCC_Part15.207_CE_AC Power	Engineer: Barry Wu
Probe: SIP-SR2-ENV216_101684_C	Polarity: Neutral
EUT: MINI RF UHF MODULE SiLABS	Power: AC 120V/60Hz
Note: Transmit at channel 903MHz	



No	Flag	Mark	Frequency (MHz)	Measure Level (dBμV)	Reading Level (dBμV)	Margin (dB)	Limit (dBμV)	Factor (dB)	Type
1			0.846	13.967	4.259	-42.033	56.000	9.708	QP
2			0.846	-5.545	-15.253	-51.545	46.000	9.708	AV
3			0.978	14.060	4.351	-41.940	56.000	9.709	QP
4			0.978	-5.182	-14.891	-51.182	46.000	9.709	AV
5			3.038	20.671	10.907	-35.329	56.000	9.764	QP
6			3.038	-2.989	-12.753	-48.989	46.000	9.764	AV
7			3.354	20.416	10.622	-35.584	56.000	9.795	QP
8			3.354	-2.852	-12.646	-48.852	46.000	9.795	AV
9		*	3.582	20.752	10.932	-35.248	56.000	9.821	QP
10			3.582	-2.716	-12.537	-48.716	46.000	9.821	AV
11			3.782	20.058	10.244	-35.942	56.000	9.814	QP
12			3.782	-2.808	-12.622	-48.808	46.000	9.814	AV

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

Factor (dB/m) = Cable Loss (dB) + LISN Factor (dB/m)

7. CONCLUSION

The data collected relate only the item(s) tested and show that the device is compliance with FCC & ISED Rules and AS/NZS 4268: 2017 standard.

Appendix A - Test Setup Photograph

Refer to "2110RSU017-UT" file.

Appendix B - EUT Photograph

Refer to "2110RSU017-UE" file.