NVLAP TESTING
NVLAP LAB CODE 600341-0

BACL Bay Area Compliance Labs Corp.

TEST REPORT

Applicant:	**Xiamen Joint Tech. Co., Ltd**
Address:	**Building #1,No.268 HouXiang Rd, Xinyang Industrial Park,Haicang District,Xiamen,Fujian,China**
Product Name:	**Electric Vehicle Charging Station**
FCC ID:	**2A2RN-ACEVL009**
Standard(s):	**47 CFR Part 15, Subpart C(15.225) ANSI C63.10-2020+Cor. 1-2023+C63.10a-2024★**
Report Number:	**2502W72823E-RF-00A**
Report Date:	**2025/9/6**

The above device has been tested and found compliant with the requirement of the relative standards by Bay Area Compliance Laboratories Corp. (Dongguan).

Reviewed By: **Alice Tan**	**Approved By:** **Pedro Yun**
Title: **RF Engineer**	Title: **RF Supervisor**

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CONTENTS

DOCUMENT REVISION HISTORY

Revision Number	Report Number	Description of Revision	Date of Revision
1.0	2502W72823E-RF-00A	Original Report	2025/9/6

1. GENERAL INFORMATION

1.1 General Description of Equipment under Test

EUT Name:	Electric Vehicle Charging Station
EUT Model:	IYILO-RA48
Multiple Model:	IYILO-RA40
Operation Frequency:	13.56 MHz
Modulation Type:	ASK
Rated Input Voltage:	AC 208-240V
Serial Number:	3876-1
EUT Received Date:	2025/8/20
EUT Received Status:	Good
Note: The multiple models are electrically identical with the test model. Please refer to the declaration let ter for more detail, which was provided by manufacturer.	

EUT Configuration:

Configuration	Model	Input Type	Output Type	Rated Current
1#	IYILO-RA48	Plug-in (NEMA 14-50)	SAE J1772	48A/40A/32A/16A
2#	IYILO-RA48	Plug-in (NEMA 14-50)	NACS	48A/40A/32A/16A
3#	IYILO-RA48	Hardwired	SAE J1772	48A/40A/32A/16A
4#	IYILO-RA48	Hardwired	NACS	48A/40A/32A/16A
5#	IYILO-RA40	Plug-in (NEMA 14-50)	SAE J1772	40A/32A/16A
6#	IYILO-RA40	Plug-in (NEMA 14-50)	NACS	40A/32A/16A
Note: 1. 48A/40A/32A/16A Rated Current is same hardware, only use the switch to adjust, so test was performed with the maximum Rated Current. 2. The input type of Plug-in (NEMA 14-50) and Hardwired are power cable, different power cable don't affect the test result, so test was performed with Plug-in (NEMA 14-50).				

1.2 Accessory Information

Accessory Description	Manufacturer	Model	Parameters
/	/	/	/

1.3 Antenna Information Detail▲

Antenna Type	input impedance (Ohm)	Frequency Range	Antenna Gain
Loop	Unknown	13.56MHz	Unknown
The design of compliance with §15.203:			
☒ Unit uses a permanently attached antenna.			
☐ Unit uses a unique coupling to the intentional radiator.			
☐ Unit was professionally installed, and installer shall be responsible for verifying that the correct antenna is employed with the unit.			

1.4 Equipment Modifications

No modifications are made to the EUT during all test items.

2. SUMMARY OF TEST RESULTS

FCC Rules	Description of Test	Result
FCC§15.207 (a)	AC Line Conducted Emissions	Compliant
§15.225 §15.209 §15.205	Radiated Spurious Emissions	Compliant
§15.225(e)	Frequency Stability	Compliant
§15.215(c)	20 dB Bandwidth	Compliant
FCC§15.203	Antenna Requirement	Compliant
§1.1310, §2.1091	RF Exposure Evaluation	Compliant
Note: Per 15B report, Configuration 1# was the worst for AC Line Conducted Emissions and Radiated Spurious Emission, so only performed it.		

3. DESCRIPTION OF TEST CONFIGURATION

3.1 EUT Operation Condition

The system was configured for testing in Engineering Mode, which was provided by the manufacturer. During the test, the EUT was operation in its maximum Rated Current, which was controlled by the Vehicle Simulator Load. Test performed with the typical card and without Card, the worst was reported.

The EUT was connected to the AC Mains with L1/L2 240V/60Hz system.

3.2 EUT Exercise Software

No software was used in test. The EUT transmit when EUT was power up.

3.3 Support Equipment List and Details

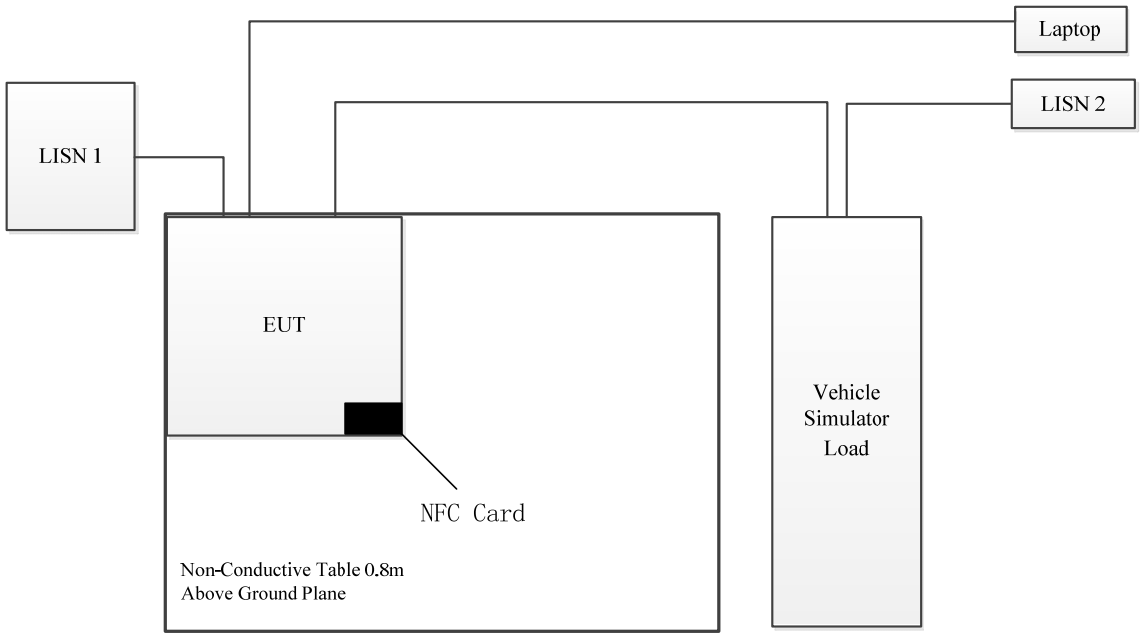
Manufacturer	Description	Model	Serial Number
GuangLuDa	Vehicle Simulator Load	GROADA-AC380V-32A-R	GROADA-FZX24051701
Lenovo	Laptop	T430	00331-10000-00001-AA357_01
Unknown	NFC Card	Unknown	Unknown

3.4 Support Cable List and Details

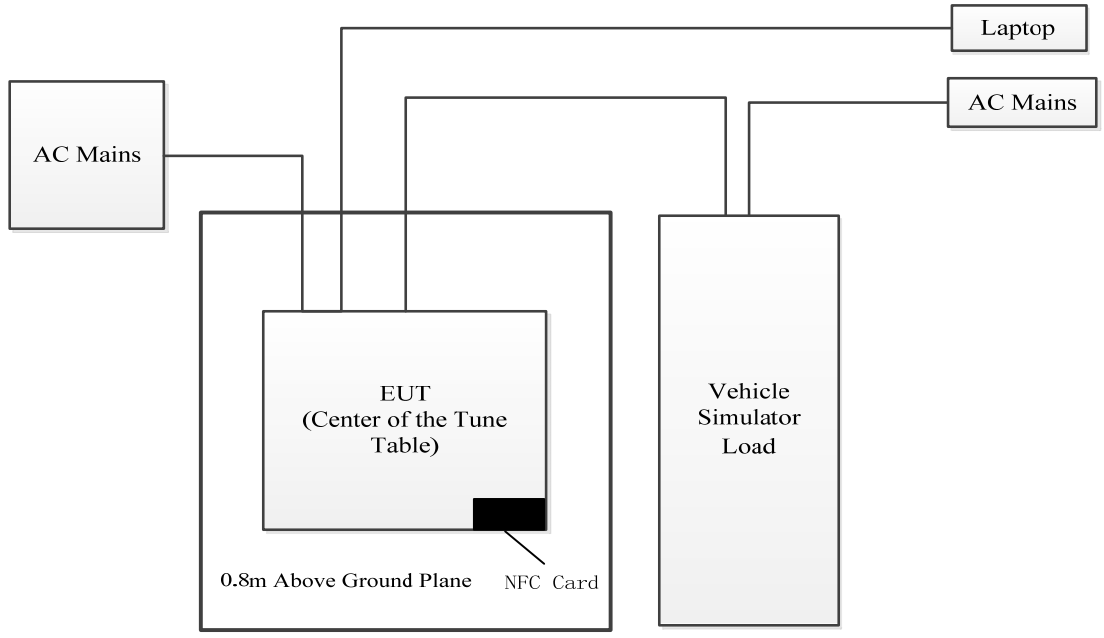
Cable Description	Shielding Type	Ferrite Core	Length (m)	From Port	To
RF 45 Cable	No	No	10	Laptop	EUT
Charging Cable	Yes	No	7.5	Vehicle Simulator Load	EUT

3.5 Block Diagram of Test Setup

AC Power Lines Conducted Emission:



Radiated Spurious Emissions:



3.6 Test Facility

The Test site used by Bay Area Compliance Laboratories Corp. (Dongguan) to collect test data is located on the No.12, Pulong East 1st Road, Tangxia Town, Dongguan, Guangdong, China.

The lab has been recognized as the FCC accredited lab under the KDB 974614 D01 and is listed in the FCC Public Access Link (PAL) database, FCC Registration No. : 829273, the FCC Designation No. : CN5044.

The lab has been recognized by Innovation, Science and Economic Development Canada to test to Canadian radio equipment requirements, the CAB identifier: CN0022.

3.7 Measurement Uncertainty

Otherwise required by the applicant or Product Regulations, Decision Rule in this report did not consider the uncertainty. The extended uncertainty given in this report is obtained by combining the standard uncertainty times the coverage factor K with the 95% confidence interval.

Parameter	Measurement Uncertainty
Occupied Channel Bandwidth	±5 %
RF output power, conducted	±0.61dB
Power Spectral Density, conducted	±0.61 dB
Unwanted Emissions, radiated	9kHz~30MHz: 3.3dB, 30MHz~200MHz: 4.55 dB, 200MHz~1GHz: 5.92 dB, 1GHz~6GHz: 4.98 dB, 6GHz~18GHz: 5.89 dB, 18GHz~26.5GHz:5.47 dB, 26.5GHz~40GHz:5.63 dB
Unwanted Emissions, conducted	±2.47 dB
Temperature	±1℃
Humidity	±5%
DC and low frequency voltages	±0.4%
Duty Cycle	1%
AC Power Lines Conducted Emission	3.11 dB (150 kHz to 30 MHz)

4. REQUIREMENTS AND TEST RESULTS

4.1 AC Line Conducted Emissions

4.1.1 Applicable Standard

FCC§15.207(a).

(a) Except as shown in paragraphs (b) and (c) of this section, for an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies, within the band 150 kHz to 30 MHz, shall not exceed the limits in the following table, as measured using a 50 μH/50 ohms line impedance stabilization network (LISN). Compliance with the provisions of this paragraph shall be based on the measurement of the radio frequency voltage between each power line and ground at the power terminal. The lower limit applies at the boundary between the frequency ranges.

	Conducted limit (dBμV)	
Frequency of emission (MHz)	Quasi-peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

*Decreases with the logarithm of the frequency.

(b) The limit shown in paragraph (a) of this section shall not apply to carrier current systems operating as intentional radiators on frequencies below 30 MHz. In lieu thereof, these carrier current systems shall be subject to the following standards:

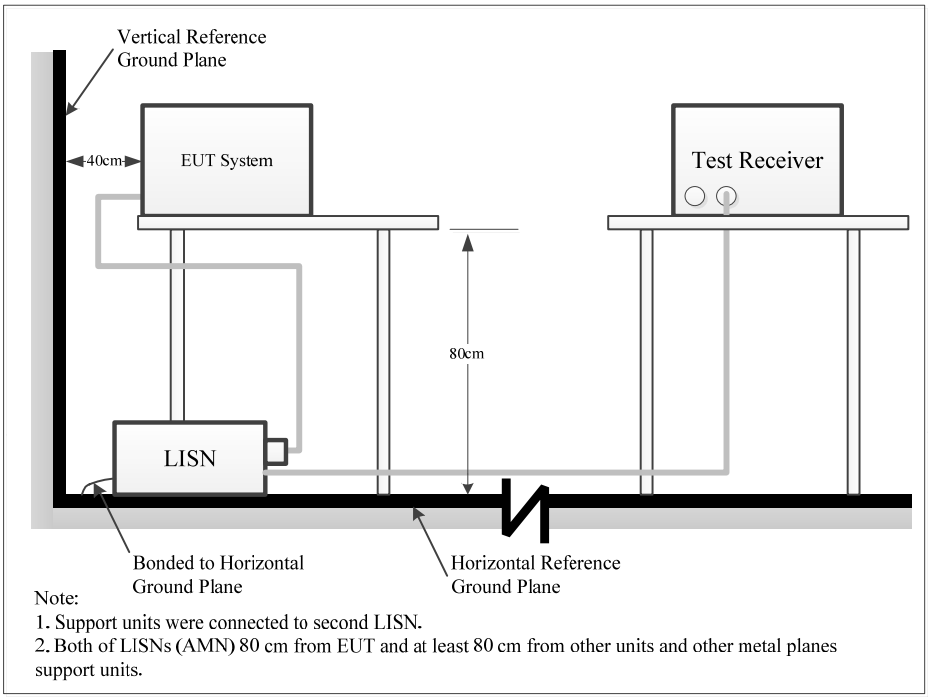
(1) For carrier current system containing their fundamental emission within the frequency band 535-1705 kHz and intended to be received using a standard AM broadcast receiver: no limit on conducted emissions.

(2) For all other carrier current systems: 1000 μV within the frequency band 535-1705 kHz, as measured using a 50 μH/50 ohms LISN.

(3) Carrier current systems operating below 30 MHz are also subject to the radiated emission limits in §15.205, §15.209, §15.221, §15.223, or §15.227, as appropriate.

(c) Measurements to demonstrate compliance with the conducted limits are not required for devices which only employ battery power for operation and which do not operate from the AC power lines or contain provisions for operation while connected to the AC power lines. Devices that include, or make provisions for, the use of battery chargers which permit operating while charging, AC adapters or battery eliminators or that connect to the AC power lines indirectly, obtainig their power through another device which is connected to the AC power lines, shall be tested to demonstrate compliance with the conducted limits.

4.1.2 EUT Setup



Note:
1. Support units were connected to second LISN.
2. Both of LISNs (AMN) 80 cm from EUT and at least 80 cm from other units and other metal planes support units.

The setup of EUT is according with per ANSI C63.10-2020 measurement procedure. The specification used was with the FCC Part 15.207 limits.

The spacing between the peripherals was 10 cm.

4.1.3 EMI Test Receiver Setup

The EMI test receiver was set to investigate the spectrum from 150 kHz to 30 MHz.

During the conducted emission test, the EMI test receiver was set with the following configurations:

Frequency Range	IF B/W
150 kHz – 30 MHz	9 kHz

4.1.4 Test Procedure

During the conducted emission test, the adapter was connected to the outlet of the LISN.

The frequency and amplitude of the six highest ac power-line conducted emissions relative to the limit, measured over all the current-carrying conductors of the EUT power cords, and the operating frequency or frequency to which the EUT is tuned (if appropriate), should be reported, unless such emissions are more than 20 dB below the limit. AC power-line conducted emissions measurements are to be separately carried out only on each of the phase ("hot") line(s) and (if used) on the neutral line(s), but not on the ground [protective earth] line(s). If less than six emission frequencies are within 20 dB of the limit, then the noise level of the measuring instrument at representative frequencies should be reported. The specific conductor of the power-line cord for each of the reported emissions should be identified. Measure the six highest emissions with respect to the limit on each current-carrying conductor of each power cord associated with the EUT (but not the power cords of associated or peripheral equipment that are part of the test configuration). Then, report the six highest emissions with respect to the limit from among all the measurements identifying the frequency and specific current-carrying conductor identified with the emission. The six highest emissions should be reported for each of the current-carrying conductors, or the six highest emissions may be reported over all the current-carrying conductors.

According FCC publication number 174176,for a device with a permanent antenna operating at or below 30 MHz, the measurements done with a suitable dummy load, in lieu of the permanent antenna under the following conditions: (1) perform the AC line conducted tests with the permanent antenna to determine compliance with the Section 15.207 limits outside the transmitter's fundamental emission band; (2) retest with a dummy load in lieu of the permanent antenna to determine compliance with the Section 15.207 limits within the transmitter's fundamental emission band.

4.1.5 Corrected Amplitude & Margin Calculation

The basic equation is as follows:

Result = Reading + Factor
Factor = attenuation caused by cable loss + voltage division factor of AMN

The "**Margin**" column of the following data tables indicates the degree of compliance within the applicable limit. The equation for margin calculation is as follows:

Margin = Limit – Result

4.1.6 Test Data

Serial Number:	3876-1	Test Date:	2025/09/04
Test Site:	Chamber 10m	Test Mode:	Transmitting
Tester:	Yukin Qiu	Test Result:	Pass

Environmental Conditions:

Temperature: (℃)	28.1	Relative Humidity: (%)	67	ATM Pressure: (kPa)	100.1

Test Equipment List and Details:

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
SCHWARZBECK	LISN	NNLK 8130	8130-00446	2025/6/25	2026/6/24
Unknown	Coaxial Cable	C-NJNJ-50	C-0400-03	2025/7/7	2026/7/6
R&S	EMI Test Receiver	ESCI	100224	2025/6/25	2026/6/24
Audix	Test Software	E3	191218 V9	N/A	N/A
Unknown	Coaxial Cable	C-NJNJ-50	C-0075-03	2025/7/7	2026/7/6
JFW	Coaxial Attenuator	50FH-006-100	F-08-EM007	2025/7/7	2026/7/6

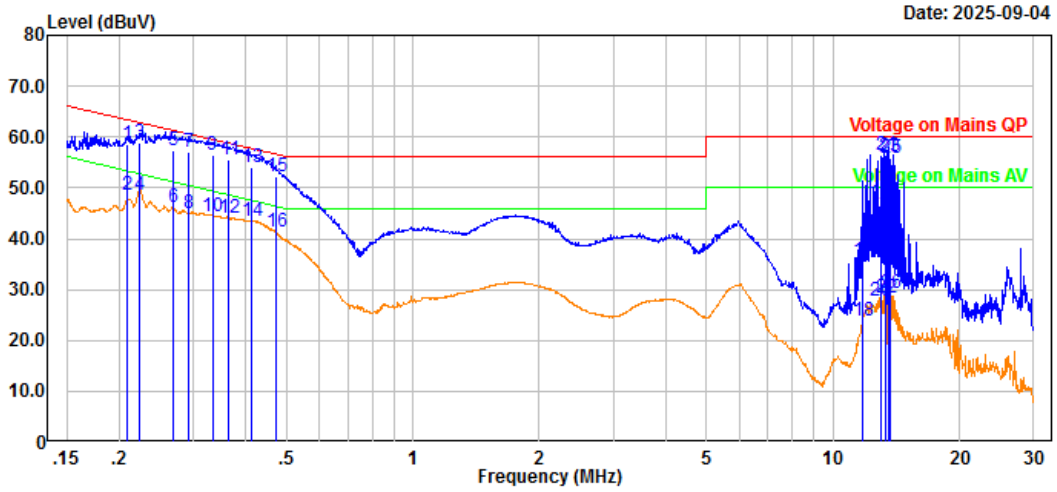
** Statement of Traceability: Bay Area Compliance Laboratories Corp. (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).*

Test Data:

With a representative tag(NFC Card) to test was the worst.

Project No.: 2502W72823E-RF
Port: line1
Test Mode: Transmitting
IF B/W 9kHz PK/AV

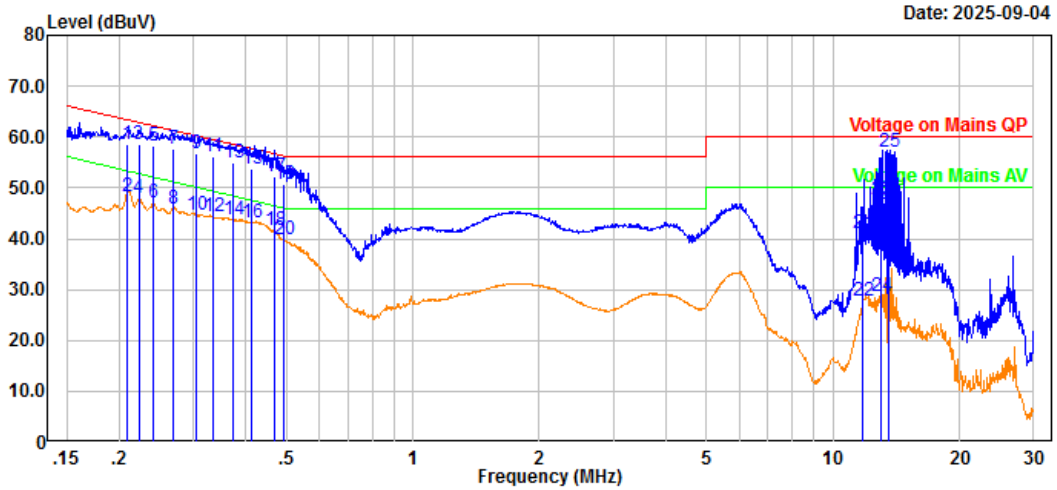
Serial No.: 3876-1
Tester: Yukin Qiu
Note:



No.	Frequency (MHz)	Reading (dBµV)	Factor (dB)	Result (dBµV)	Limit (dBµV)	Margin (dB)	Measurement
1	0.208	52.43	6.00	58.43	63.27	4.84	QP
2	0.208	42.51	6.00	48.51	53.27	4.76	Average
3	0.223	52.73	6.01	58.74	62.70	3.96	QP
4	0.223	42.53	6.01	48.54	52.70	4.16	Average
5	0.270	51.18	6.06	57.24	61.12	3.88	QP
6	0.270	40.22	6.06	46.28	51.12	4.84	Average
7	0.293	50.91	6.08	56.99	60.43	3.44	QP
8	0.293	38.80	6.08	44.88	50.43	5.55	Average
9	0.333	50.27	6.09	56.36	59.37	3.01	QP
10	0.333	38.43	6.09	44.52	49.37	4.85	Average
11	0.366	49.42	6.10	55.52	58.60	3.08	QP
12	0.366	37.88	6.10	43.98	48.60	4.62	Average
13	0.412	47.83	6.10	53.93	57.61	3.68	QP
14	0.412	37.25	6.10	43.35	47.61	4.26	Average
15	0.471	46.03	6.09	52.12	56.49	4.37	QP
16	0.471	35.32	6.09	41.41	46.49	5.08	Average
17	11.741	29.22	6.32	35.54	60.00	24.46	QP
18	11.741	17.67	6.32	23.99	50.00	26.01	Average
19	12.955	40.77	6.37	47.14	60.00	12.86	QP
20	12.955	21.39	6.37	27.76	50.00	22.24	Average
21	13.351	50.00	6.38	56.38	60.00	3.62	QP
22	13.351	21.93	6.38	28.31	50.00	21.69	Average
23	13.563	49.85	6.38	56.23	60.00	3.77	QP
24	13.563	38.45	6.38	44.83	50.00	5.17	Average
25	13.687	49.56	6.38	55.94	60.00	4.06	QP
26	13.687	22.92	6.38	29.30	50.00	20.70	Average

Project No.: 2502W72823E-RF
Port: line2
Test Mode: Transmitting
IF B/W 9kHz PK/AV

Serial No.: 3876-1
Tester: Yukin Qiu
Note:



No.	Frequency (MHz)	Reading (dBµV)	Factor (dB)	Result (dBµV)	Limit (dBµV)	Margin (dB)	Measurement
1	0.209	52.43	6.09	58.52	63.25	4.73	QP
2	0.209	42.25	6.09	48.34	53.25	4.91	Average
3	0.223	52.44	6.09	58.53	62.72	4.19	QP
4	0.223	41.81	6.09	47.90	52.72	4.82	Average
5	0.241	52.29	6.09	58.38	62.08	3.70	QP
6	0.241	40.97	6.09	47.06	52.08	5.02	Average
7	0.269	51.58	6.09	57.67	61.14	3.47	QP
8	0.269	39.73	6.09	45.82	51.14	5.32	Average
9	0.306	50.63	6.09	56.72	60.08	3.36	QP
10	0.306	38.53	6.09	44.62	50.08	5.46	Average
11	0.334	50.08	6.09	56.17	59.36	3.19	QP
12	0.334	38.24	6.09	44.33	49.36	5.03	Average
13	0.374	48.79	6.10	54.89	58.41	3.52	QP
14	0.374	37.79	6.10	43.89	48.41	4.52	Average
15	0.412	47.60	6.09	53.69	57.61	3.92	QP
16	0.412	37.16	6.09	43.25	47.61	4.36	Average
17	0.468	46.30	6.02	52.32	56.55	4.23	QP
18	0.468	35.60	6.02	41.62	46.55	4.93	Average
19	0.494	44.57	6.00	50.57	56.10	5.53	QP
20	0.494	33.72	6.00	39.72	46.10	6.38	Average
21	11.795	34.68	6.33	41.01	60.00	18.99	QP
22	11.795	21.34	6.33	27.67	50.00	22.33	Average
23	12.969	41.44	6.37	47.81	60.00	12.19	QP
24	12.969	22.19	6.37	28.56	50.00	21.44	Average
25	13.563	50.57	6.38	56.95	60.00	3.05	QP
26	13.563	40.44	6.38	46.82	50.00	3.18	Average

4.2 Radiated Spurious Emissions

4.2.1 Applicable Standard

As per FCC Part 15.225

(a) The field strength of any emissions within the band 13.553–13.567 MHz shall not exceed 15,848 microvolts/meter at 30 meters.

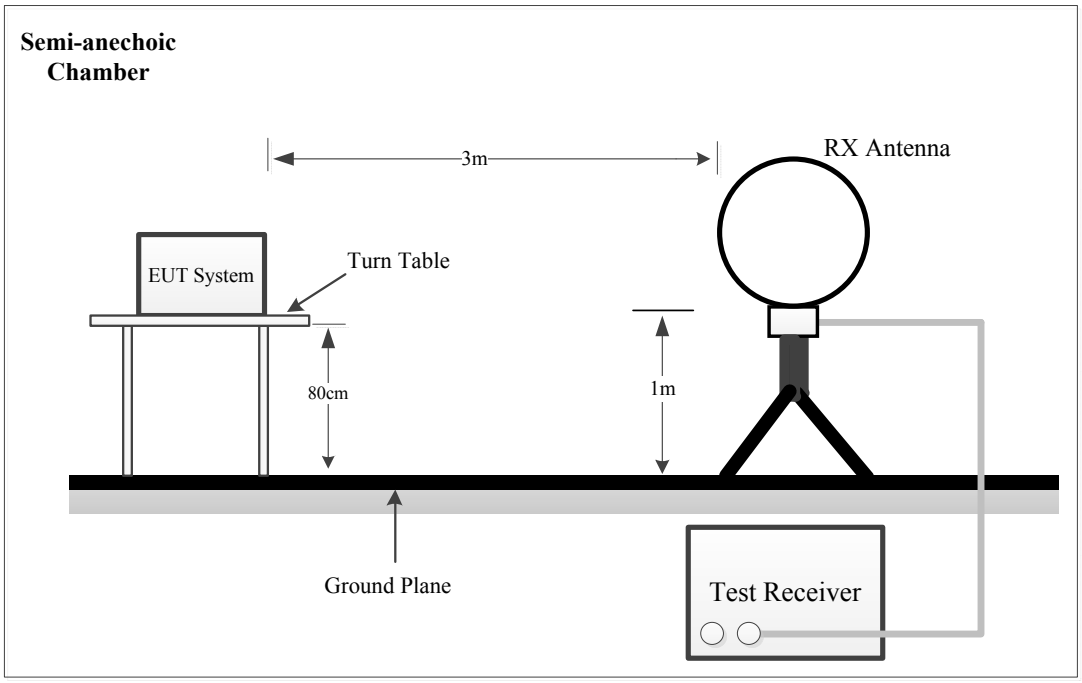
(b) Within the bands 13.410–13.553 MHz and 13.567–13.710 MHz, the field strength of any emissions shall not exceed 334 microvolts/meter at 30 meters.

(c) Within the bands 13.110–13.410 MHz and 13.710–14.010 MHz the field strength of any emissions shall not exceed 106 microvolts/meter at 30 meters.

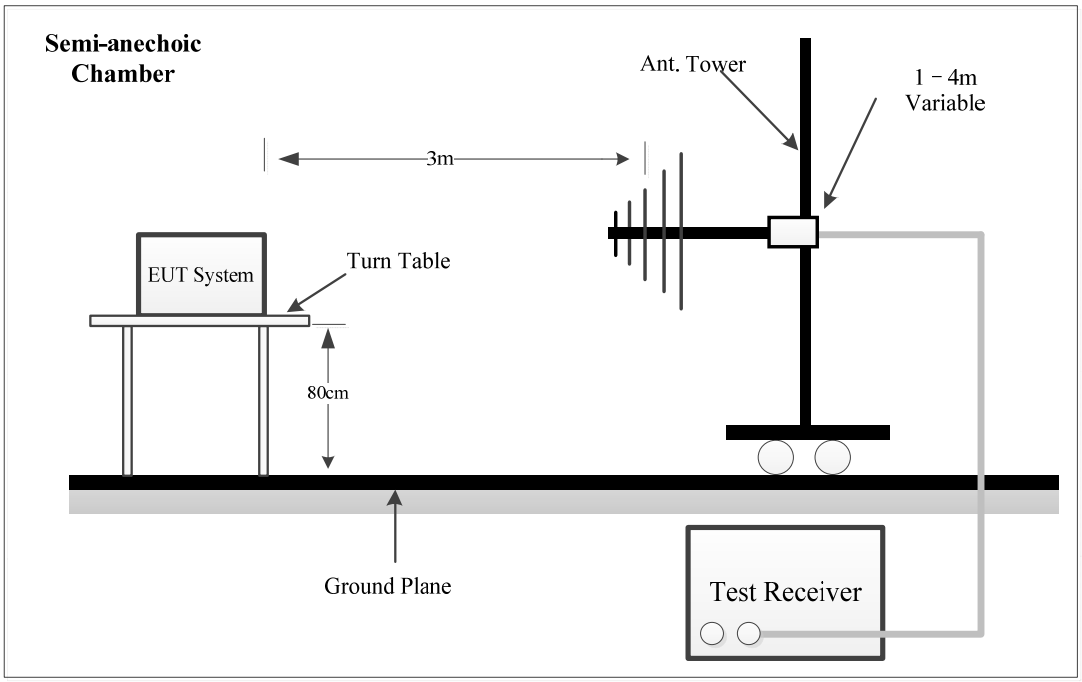
(d) The field strength of any emissions appearing outside of the 13.110–14.010 MHz band shall not exceed the general radiated emission limits in §15.209.

4.2.2 EUT Setup

9kHz~30MHz:



30MHz~1GHz:



The radiated emission tests were performed in the 3-meter chamber test site, using the setup accordance with the ANSI C63.10-2020.

For 9kHz-30MHz test, the lowest height of the magnetic antenna shall be 1 m above the ground and three antenna orientations (parallel, perpendicular, and ground-parallel) shall be measured.

4.2.3 EMI Test Receiver & Spectrum Analyzer Setup

The system was investigated from 9 kHz to 1 GHz.

During the radiated emission test, the EMI test Receiver was set with the following configurations:

Frequency Range	RBW	Video B/W	IF B/W	Measurement
9 kHz – 150 kHz	200 Hz	1 kHz	200 Hz	QP/AV
150 kHz – 30 MHz	9 kHz	30 kHz	9 kHz	QP/AV
30 MHz – 1000 MHz	120 kHz	500 kHz	/	PK
	/	/	120 kHz	QP

4.2.4 Test Procedure

Maximizing procedure was performed on the highest emissions to ensure that the EUT complied with all installation combinations.

Data was recorded in Quasi-peak detection mode for frequency range of 9 kHz-1 GHz except 9-90 kHz, 110-490 kHz, employing an average detector.

If the maximized peak measured value complies with under the QP/Average limit more than 6dB, then it is unnecessary to perform an QP/Average measurement.

4.2.5 Corrected Result & Margin Calculation

$E_{Log} = 20 \times \log_{10}(E_{Linear})$

E_{Linear} is the field strength of the emission, in μ V/m
E_{Log} is the field strength of the emission, in dB μ V/m

For 9kHz-30MHz test, test distance is 3m, extrapolation limit shall be calculated using Equation:

$E_{limit\text{-}measure} = E_{limit\text{-}Standard} + 40 \times \log_{10}(d_{standard}/d_{measure})$

The basic equation is as follows:

Result = Reading + Factor
Factor= Antenna Factor + Cable Loss- Amplifier Gain

The "**Margin**" column of the following data tables indicates the degree of compliance within the applicable limit. The equation for margin calculation is as follows:

Margin = Limit – Result

4.2.6 Test Data

Serial Number:	3876-1	Test Date:	2025/9/1
Test Site:	Chamber10m	Test Mode:	Transmitting
Tester:	Leesin Xiang	Test Result:	Pass

Environmental Conditions:					
Temperature: (℃)	29.4	Relative Humidity: (%)	44	ATM Pressure: (kPa)	100.2

Test Equipment List and Details:

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
EMCO	Passive Loop Antenna	6512	9706-1206	2023/10/25	2026/10/24
Sunol Sciences	Hybrid Antenna	JB3	A060611-1	2025/6/23	2028/6/22
Narda	Coaxial Attenuator	779-6dB	04269	2025/6/23	2028/6/22
Unknown	Coaxial Cable	C-NJNJ-50	C-1000-01	2025/7/1	2026/6/30
Unknown	Coaxial Cable	C-NJNJ-50	C-0400-04	2025/7/1	2026/6/30
Unknown	Coaxial Cable	C-NJNJ-50	C-0530-01	2025/7/1	2026/6/30
Sonoma	Amplifier	310N	185914	2025/8/25	2026/8/24
R&S	EMI Test Receiver	ESR3	102453	2025/6/25	2026/6/24
Audix	Test Software	E3	191218 V9	N/A	N/A

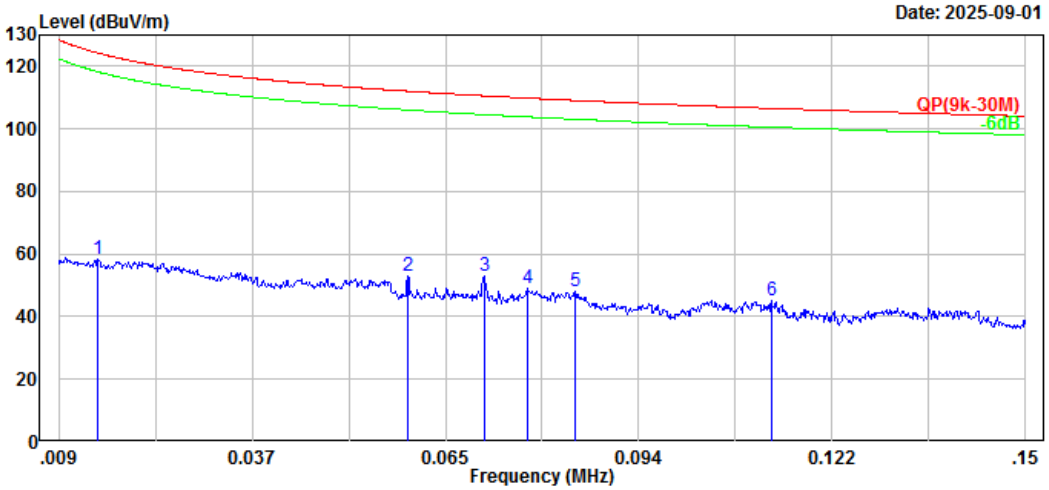
** Statement of Traceability: Bay Area Compliance Laboratories Corp. (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).*

Test Data:

Please refer to the below table and plots.
With a representative tag(NFC Card) to test was the worst.

1) 9kHz~30MHz
Parallel:

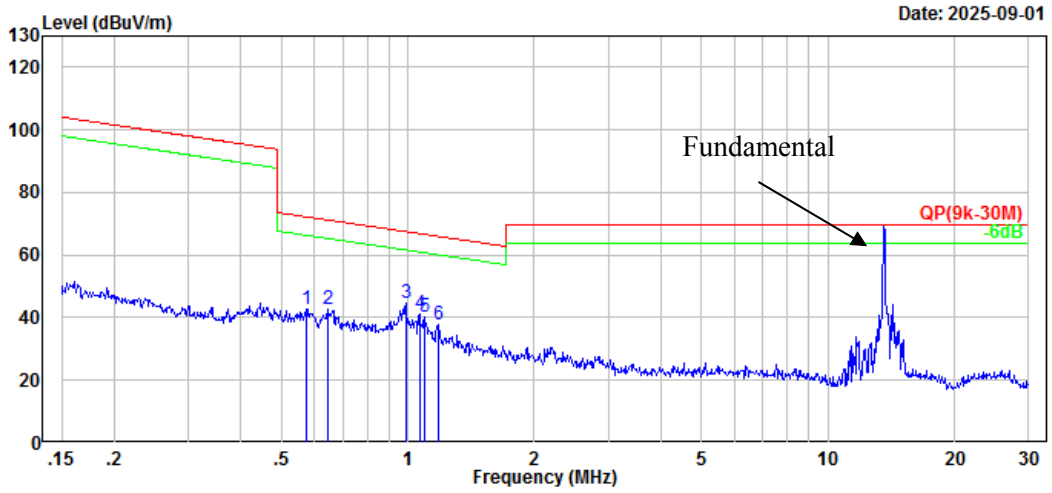
Project No.: 2502W72823E-RF Serial No.: 3876-1
Polarization: Parallel Tester: Leesin Xiang
Test Mode: Transmitting
Note:
RBW:200Hz VBW:1kHz



No.	Frequency (MHz)	Reading (dBµV)	Factor (dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Measurement
1	0.015	3.69	54.84	58.53	124.29	65.76	Peak
2	0.060	6.91	46.15	53.06	112.06	59.00	Peak
3	0.071	8.96	44.22	53.18	110.57	57.39	Peak
4	0.077	6.11	43.14	49.25	109.83	60.58	Peak
5	0.084	6.36	41.95	48.31	109.09	60.78	Peak
6	0.113	6.66	38.41	45.07	106.55	61.48	Peak

Project No.: 2502W72823E-RF
Polarization: Parallel
Test Mode: Transmitting
Note:
RBW:9kHz VBW:30kHz

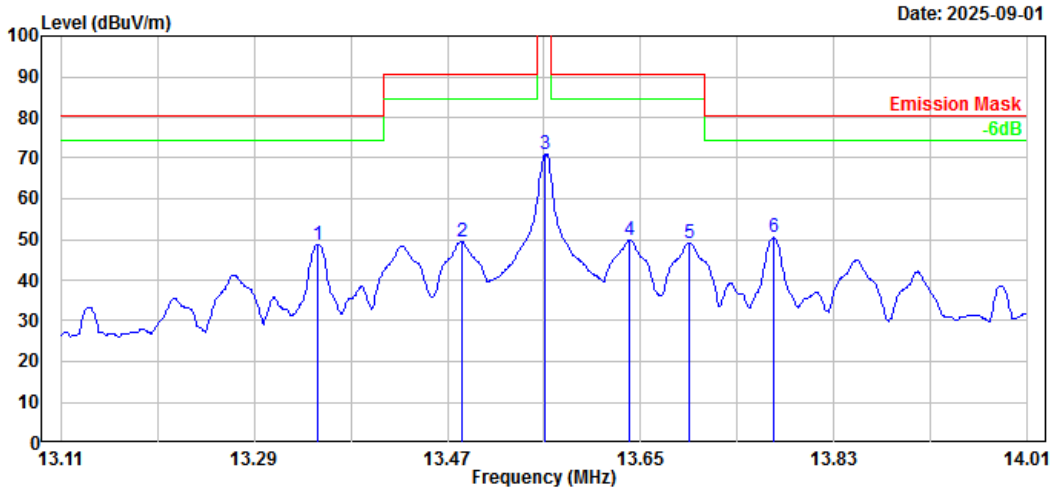
Serial No.: 3876-1
Tester: Leesin Xiang



No.	Frequency (MHz)	Reading (dBµV)	Factor (dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Measurement
1	0.573	17.22	25.65	42.87	72.41	29.54	Peak
2	0.647	17.92	24.84	42.76	71.33	28.57	Peak
3	0.989	25.14	19.45	44.59	67.57	22.98	Peak
4	1.065	22.38	18.95	41.33	66.91	25.58	Peak
5	1.094	21.16	18.83	39.99	66.68	26.69	Peak
6	1.178	19.22	18.46	37.68	66.02	28.34	Peak

Project No.: 2502W72823E-RF
Polarization: Parallel
Test Mode: Transmitting
Note:
RBW:9kHz VBW:30kHz

Serial No.: 3876-1
Tester: Leesin Xiang

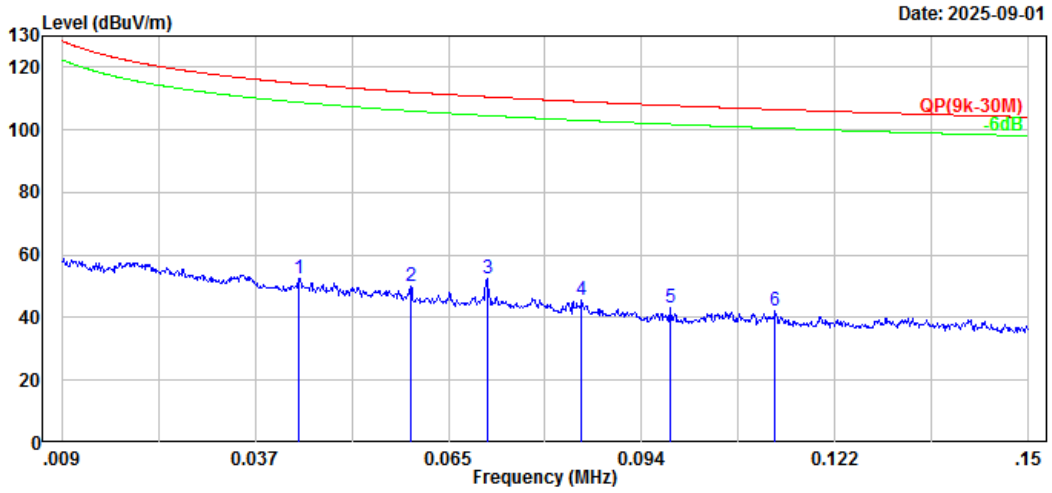


No.	Frequency (MHz)	Reading (dBµV)	Factor (dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Measurement
1	13.349	41.50	7.30	48.80	80.51	31.71	Peak
2	13.484	42.18	7.28	49.46	90.47	41.01	Peak
3	13.561	63.76	7.26	71.02	124.00	52.98	Peak
4	13.639	42.59	7.25	49.84	90.47	40.63	Peak
5	13.695	41.99	7.24	49.23	90.47	41.24	Peak
6	13.773	43.14	7.24	50.38	80.51	30.13	Peak

Perpendicular:

Project No.: 2502W72823E-RF
Polarization: Perpendicular
Test Mode: Transmitting
Note:
RBW:200Hz VBW:1kHz

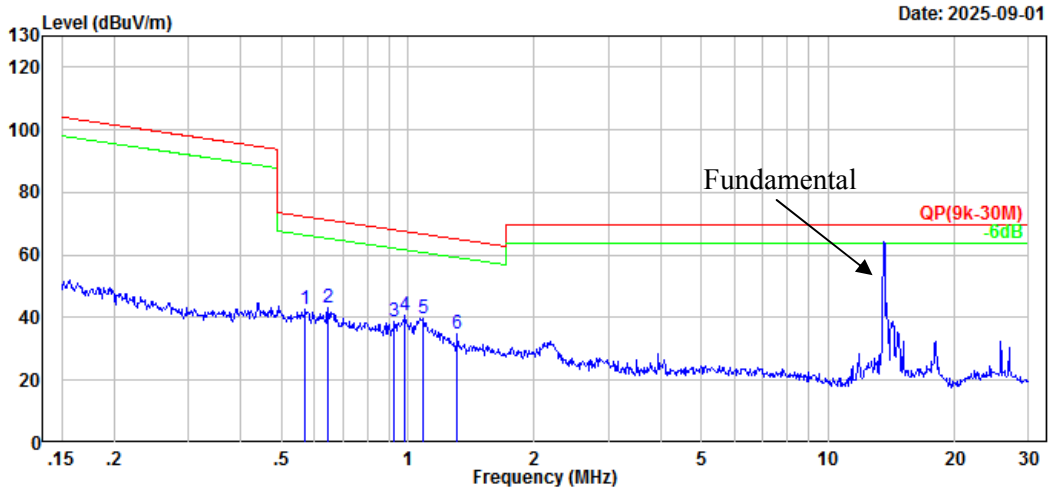
Serial No.: 3876-1
Tester: Leesin Xiang



No.	Frequency (MHz)	Reading (dBµV)	Factor (dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Measurement
1	0.044	3.57	48.95	52.52	114.83	62.31	Peak
2	0.060	4.04	46.15	50.19	112.06	61.87	Peak
3	0.071	8.14	44.22	52.36	110.57	58.21	Peak
4	0.085	3.79	41.85	45.64	109.03	63.39	Peak
5	0.098	3.42	39.56	42.98	107.81	64.83	Peak
6	0.113	3.69	38.41	42.10	106.54	64.44	Peak

Project No.: 2502W72823E-RF
Polarization: Perpendicular
Test Mode: Transmitting
Note:
RBW:9kHz VBW:30kHz

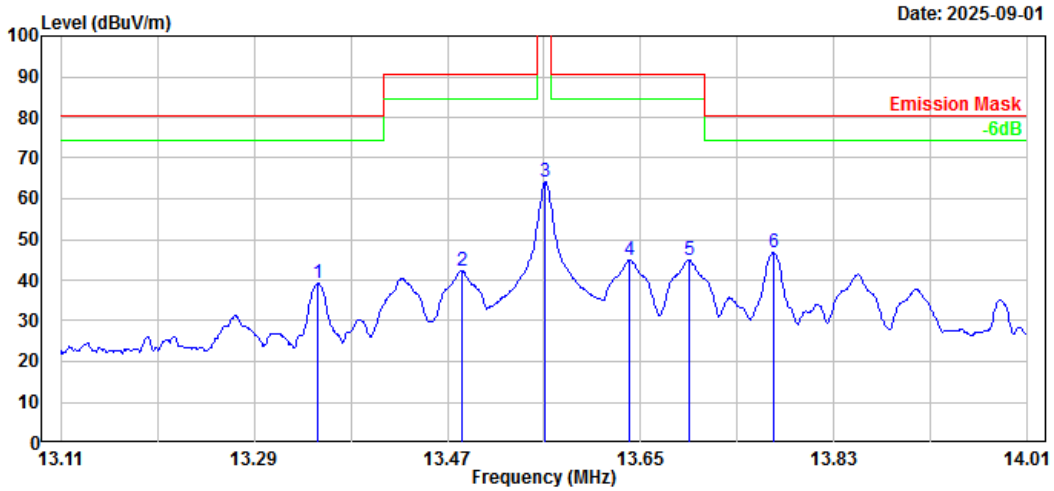
Serial No.: 3876-1
Tester: Leesin Xiang



No.	Frequency (MHz)	Reading (dBµV)	Factor (dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Measurement
1	0.570	16.77	25.68	42.45	72.46	30.01	Peak
2	0.644	18.11	24.87	42.98	71.38	28.40	Peak
3	0.928	18.13	20.70	38.83	68.13	29.30	Peak
4	0.984	21.03	19.56	40.59	67.62	27.03	Peak
5	1.088	20.97	18.85	39.82	66.72	26.90	Peak
6	1.310	16.90	17.89	34.79	65.08	30.29	Peak

Project No.: 2502W72823E-RF
Polarization: Perpendicular
Test Mode: Transmitting
Note:
RBW:9kHz VBW:30kHz

Serial No.: 3876-1
Tester: Leesin Xiang

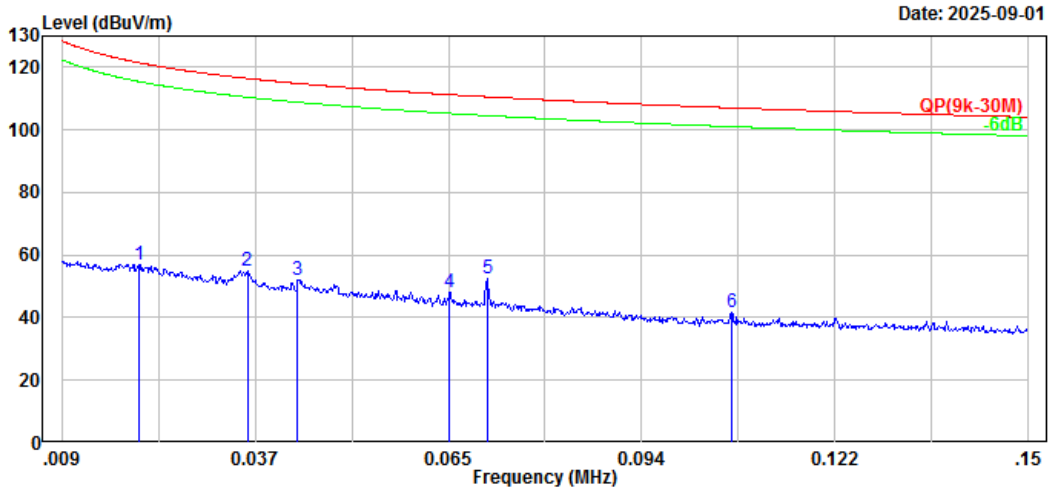


No.	Frequency (MHz)	Reading (dBµV)	Factor (dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Measurement
1	13.349	31.82	7.30	39.12	80.51	41.39	Peak
2	13.484	35.14	7.28	42.42	90.47	48.05	Peak
3	13.561	56.93	7.26	64.19	124.00	59.81	Peak
4	13.640	37.65	7.25	44.90	90.47	45.57	Peak
5	13.695	37.61	7.24	44.85	90.47	45.62	Peak
6	13.773	39.45	7.24	46.69	80.51	33.82	Peak

Ground-parallel:

Project No.: 2502W72823E-RF
Polarization: Ground-parallel
Test Mode: Transmitting
Note:
RBW:200Hz VBW:1kHz

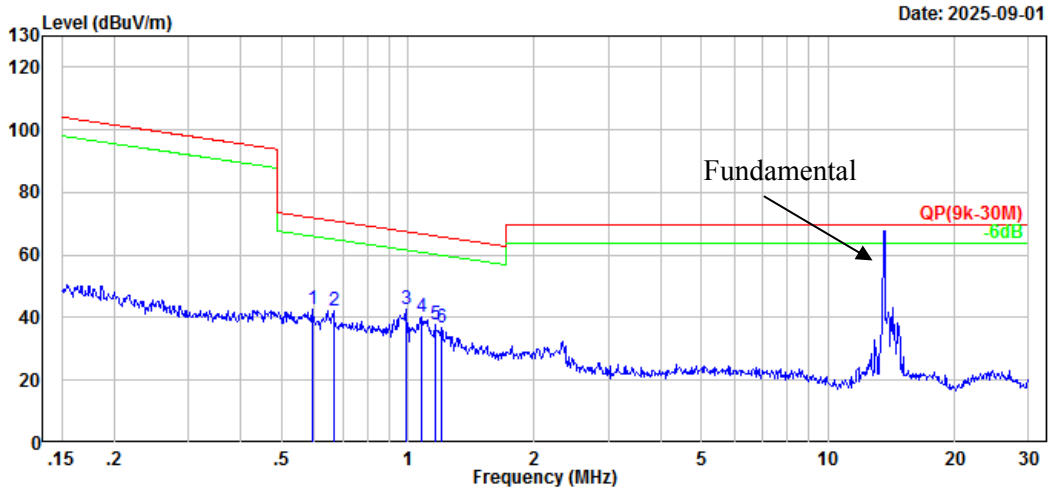
Serial No.: 3876-1
Tester: Leesin Xiang



No.	Frequency (MHz)	Reading (dBµV)	Factor (dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Measurement
1	0.020	3.54	53.55	57.09	121.46	64.37	Peak
2	0.036	4.32	50.46	54.78	116.46	61.68	Peak
3	0.043	3.26	48.97	52.23	114.85	62.62	Peak
4	0.066	2.82	45.17	47.99	111.27	63.28	Peak
5	0.071	8.49	44.22	52.71	110.57	57.86	Peak
6	0.107	2.80	38.77	41.57	107.04	65.47	Peak

Project No.: 2502W72823E-RF
Polarization: Ground-parallel
Test Mode: Transmitting
Note:
RBW:9kHz VBW:30kHz

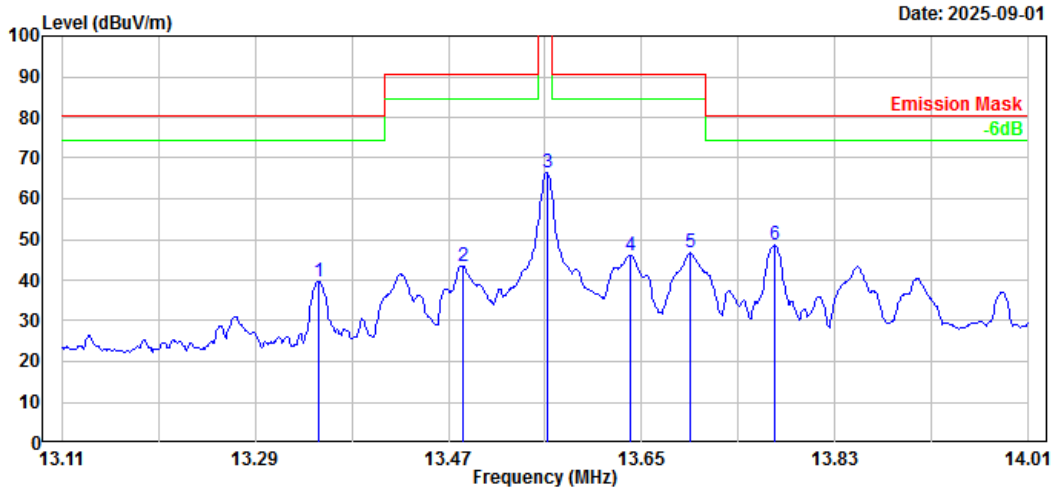
Serial No.: 3876-1
Tester: Leesin Xiang



No.	Frequency (MHz)	Reading (dBµV)	Factor (dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Measurement
1	0.592	17.06	25.42	42.48	72.13	29.65	Peak
2	0.665	17.71	24.66	42.37	71.09	28.72	Peak
3	0.989	23.23	19.45	42.68	67.57	24.89	Peak
4	1.077	21.46	18.90	40.36	66.82	26.46	Peak
5	1.160	19.02	18.53	37.55	66.16	28.61	Peak
6	1.203	18.54	18.34	36.88	65.83	28.95	Peak

Project No.: 2502W72823E-RF
Polarization: Ground-parallel
Test Mode: Transmitting
Note:
RBW:9kHz VBW:30kHz

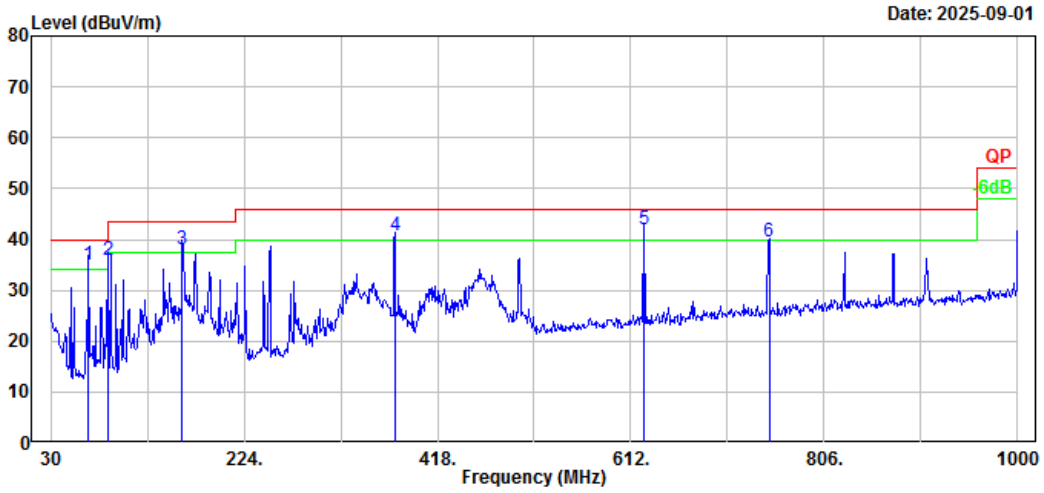
Serial No.: 3876-1
Tester: Leesin Xiang



No.	Frequency (MHz)	Reading (dBµV)	Factor (dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Measurement
1	13.349	32.40	7.30	39.70	80.51	40.81	Peak
2	13.483	36.27	7.28	43.55	90.47	46.92	Peak
3	13.562	59.33	7.26	66.59	124.00	57.41	Peak
4	13.639	38.95	7.25	46.20	90.47	44.27	Peak
5	13.695	39.37	7.24	46.61	90.47	43.86	Peak
6	13.773	41.26	7.24	48.50	80.51	32.01	Peak

2) 30MHz-1GHz

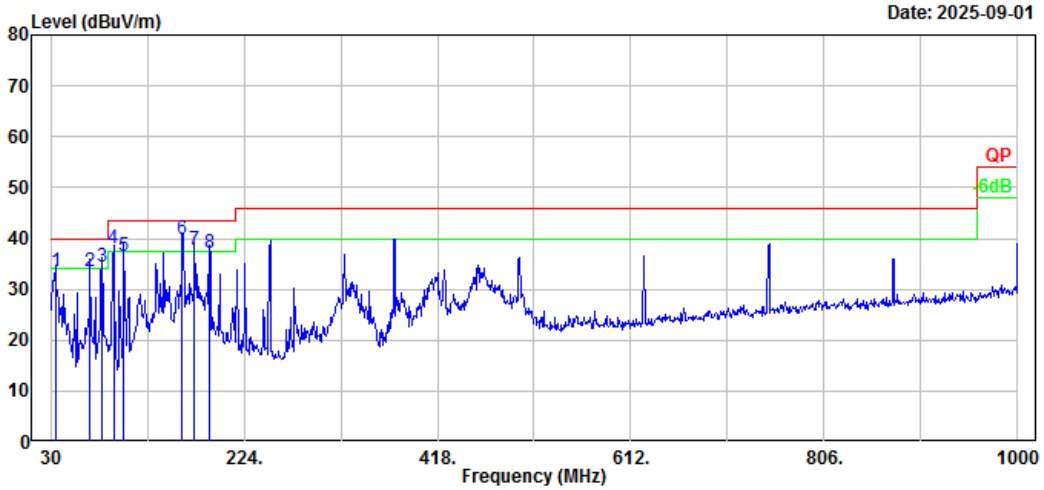
Project No.: 2502W72823E-RF Serial No.: 3876-1
Polarization: Horizontal Tester: Leesin Xiang
Test Mode: Transmitting
Note:
RBW:120kHz VBW:500kHz



No.	Frequency (MHz)	Reading (dBµV)	Factor (dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Measurement
1	67.83	48.91	-13.90	35.01	40.00	4.99	QP
2	87.23	50.30	-14.42	35.88	40.00	4.12	QP
3	161.92	47.89	-9.79	38.10	43.50	5.40	QP
4	375.32	48.19	-7.49	40.70	46.00	5.30	QP
5	625.58	44.70	-2.66	42.04	46.00	3.96	QP
6	750.71	40.00	-0.34	39.66	46.00	6.34	QP

Project No.: 2502W72823E-RF
Polarization: Vertical
Test Mode: Transmitting
Note:
RBW:120kHz VBW:500kHz

Serial No.: 3876-1
Tester: Leesin Xiang



No.	Frequency (MHz)	Reading (dBµV)	Factor (dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Measurement
1	34.85	38.20	-4.83	33.37	40.00	6.63	QP
2	69.77	47.51	-13.89	33.62	40.00	6.38	QP
3	81.41	48.90	-14.53	34.37	40.00	5.63	QP
4	93.05	51.69	-13.72	37.97	43.50	5.53	QP
5	103.72	48.31	-11.64	36.67	43.50	6.83	QP
6	161.92	49.69	-9.79	39.90	43.50	3.60	QP
7	174.53	48.60	-10.91	37.69	43.50	5.81	QP
8	189.08	48.50	-11.26	37.24	43.50	6.26	QP

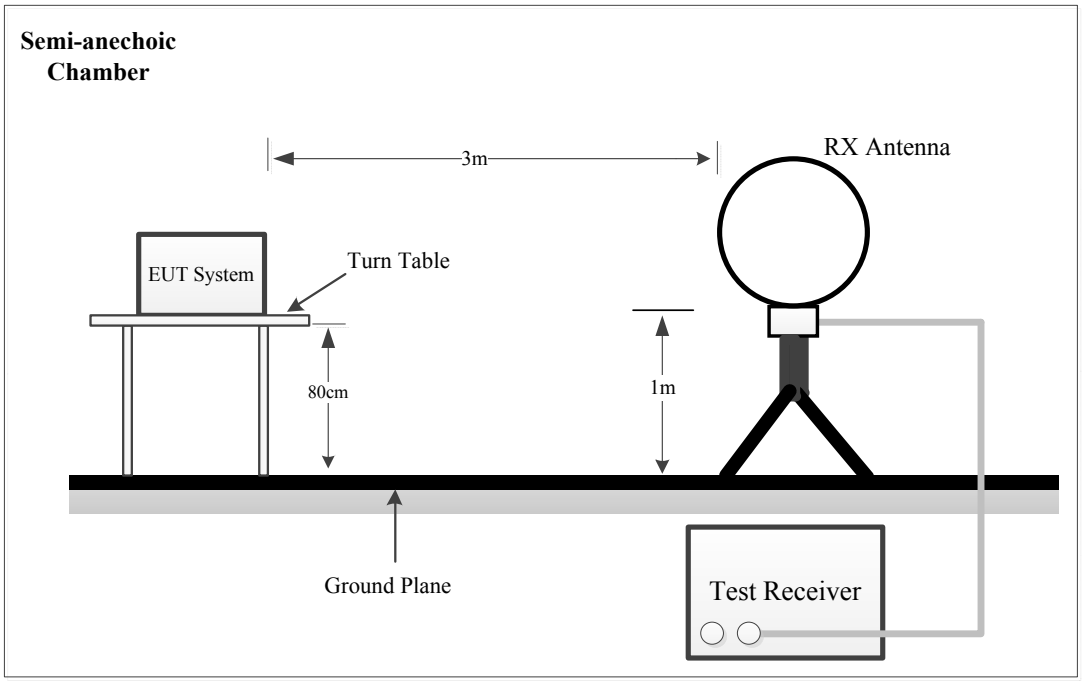
4.3 20 dB Emission Bandwidth

4.3.1 Applicable Standard

FCC §15.215

Intentional radiators operating under the alternative provisions to the general emission limits, as contained in §15.217 through § 15.257 and in Subpart E of this part, must be designed to ensure that the 20 dB bandwidth of the emission, or whatever bandwidth may otherwise be specified in the specific rule section under which the equipment operates, is contained within the frequency band designated in the rule section under which the equipment is operated. The requirement to contain the designated bandwidth of the emission within the specified frequency band includes the effects from frequency sweeping, frequency hopping and other modulation techniques that may be employed as well as the frequency stability of the transmitter over expected variations in temperature and supply voltage. If a frequency stability is not specified in the regulations, it is recommended that the fundamental emission be kept within at least the central 80% of the permitted band in order to minimize the possibility of out-of band operation.

4.3.2 EUT Setup



4.3.3 Test Procedure

According to ANSI C63.10-2020 Section 6.9.2

a) The spectrum analyzer center frequency is set to the nominal EUT channel center frequency. The span range for the EMI receiver or spectrum analyzer shall be between two times and five times the OBW.
b) The nominal IF filter bandwidth (3 dB RBW) shall be in the range of 1% to 5% of the OBW and video bandwidth (VBW) shall be approximately three times RBW, unless otherwise specified by the applicable requirement.
c) Set the reference level of the instrument as required, keeping the signal from exceeding the maximum input mixer level for linear operation. In general, the peak of the spectral envelope shall be more than [10 log (OBW/RBW)] below the reference level. Specific guidance is given in 4.1.5.2
d) Steps a) through c) might require iteration to adjust within the specified tolerances.
e) The dynamic range of the instrument at the selected RBW shall be more than 10 dB below the target

"−xx dB down" requirement; that is, if the requirement calls for measuring the −20 dB OBW, the instrument noise floor at the selected RBW shall be at least 30 dB below the reference value.
f) Set detection mode to peak and trace mode to max hold.
g) Determine the reference value: Set the EUT to transmit an unmodulated carrier or modulated signal, as applicable. Allow the trace to stabilize. Set the spectrum analyzer marker to the highest level of the displayed trace (this is the reference value).

h) Determine the "−xx dB down amplitude" using [(reference value) − xx]. Alternatively, this calculation may be made by using the marker-delta function of the instrument.
i) If the reference value is determined by an unmodulated carrier, then turn the EUT modulation ON, and either clear the existing trace or start a new trace on the spectrum analyzer and allow the new trace to stabilize. Otherwise, the trace from step g) shall be used for step j).

j) Place two markers, one at the lowest frequency and the other at the highest frequency of the envelope of the spectral display, such that each marker is at or slightly below the "−xx dB down amplitude" determined in step h). If a marker is below this "−xx dB down amplitude" value, then it shall be as close as possible to this value. The occupied bandwidth is the frequency difference between the two markers. Alternatively, set a marker at the lowest frequency of the envelope of the spectral display, such that the marker is at or slightly below the "−xx dB down amplitude" determined in step

h). Reset the marker-delta function and move the marker to the other side of the emission until the delta marker amplitude is at the same level as the reference marker amplitude. The marker-delta frequency reading at this point is the specified emission bandwidth.

k) The occupied bandwidth shall be reported by providing plot(s) of the measuring instrument display; the plot axes and the scale units per division shall be clearly labeled. Tabular data may be reported in addition to the plot(s).

4.3.4 Test Data

Serial Number:	3876-1	Test Date:	2025/9/1
Test Site:	Chamber10 m	Test Mode:	Transmitting
Tester:	Leesin Xiang	Test Result:	Pass

Environmental Conditions:					
Temperature: (℃)	29.4	Relative Humidity: (%)	44	ATM Pressure: (kPa)	100.2

Test Equipment List and Details:

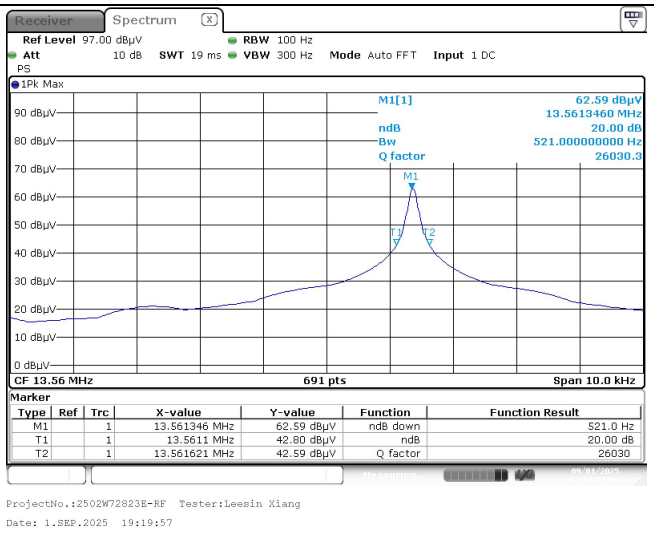
Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
EMCO	Passive Loop Antenna	6512	9706-1206	2023/10/25	2026/10/24
Narda	Coaxial Attenuator	779-6dB	04269	2025/6/23	2028/6/22
Unknown	Coaxial Cable	C-NJNJ-50	C-1000-01	2025/7/1	2026/6/30
Unknown	Coaxial Cable	C-NJNJ-50	C-0400-04	2025/7/1	2026/6/30
Unknown	Coaxial Cable	C-NJNJ-50	C-0530-01	2025/7/1	2026/6/30
Sonoma	Amplifier	310N	185914	2025/8/25	2026/8/24
R&S	EMI Test Receiver	ESR3	102453	2025/6/25	2026/6/24

** Statement of Traceability: Bay Area Compliance Laboratories Corp. (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).*

Test Data:

Frequency (MHz)	20 dB Bandwidth (kHz)
13.56	0.521

20dB Emission Bandwidth



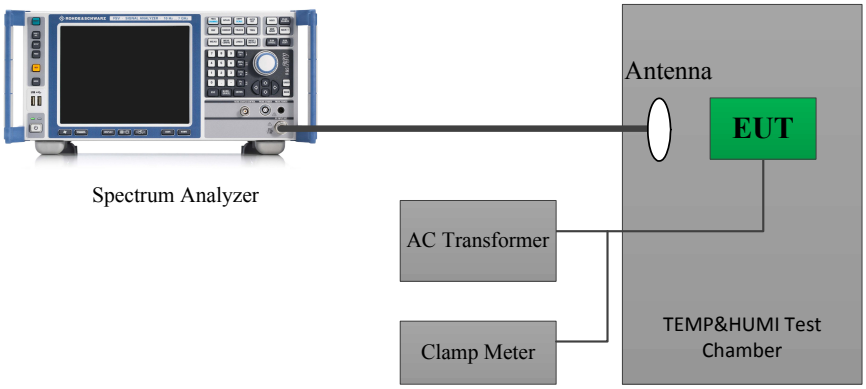
4.4 Frequency Stability

4.4.1 Applicable Standard

As per FCC Part 15.225:

The frequency tolerance of the carrier signal shall be maintained within ±0.01% of the operating frequency over a temperature variation of −20 degrees to +50 degrees C at normal supply voltage, and for a variation in the primary supply voltage from 85% to 115% of the rated supply voltage at a temperature of 20 degrees C. For battery operated equipment, the equipment tests shall be performed using a new battery.

4.4.2 EUT Setup



4.4.3 Test Procedure

According to ANSI C63.10-2020 Section 6.8

Frequency stability with respect to ambient temperature

a) Supply the EUT with a nominal ac voltage or install a new or fully charged battery in the EUT. If possible, a dummy load shall be connected to the EUT because an antenna near the metallic walls of an environmental test chamber could affect the output frequency of the EUT. If the EUT is equipped with a permanently attached, adjustable-length antenna, then the EUT shall be placed in the center of the chamber with the antenna adjusted to the shortest length possible. Turn ON the EUT and tune it to one of the number of frequencies shown in 5.6.

b) Couple the unlicensed wireless device output to the measuring instrument by connecting an antenna to the measuring instrument with a suitable length of coaxial cable and placing the measuring antenna near the EUT (e.g., 15 cm away), or by connecting a dummy load to the measuring instrument, through an attenuator if necessary.

NOTE—An instrument that has an adequate level of accuracy as specified by the procuring or regulatory agency is the recommended measuring instrument.

c) Adjust the location of the measurement antenna and the controls on the measurement instrument to obtain a suitable signal level (i.e., a level that will not overload the measurement instrument but is strong enough to allow measurement of the operating or fundamental frequency of the EUT).

d) Turn the EUT OFF and place it inside the environmental temperature chamber. For devices that have oscillator heaters, energize only the heater circuit.

e) Set the temperature control on the chamber to the highest specified in the regulatory requirements for the type of device and allow the oscillator heater and the chamber temperature to stabilize.

f) While maintaining a constant temperature inside the environmental chamber, turn the EUT ON and record the operating frequency at startup, and at 2 minutes, 5 minutes, and 10 minutes after the EUT is energized. Four measurements in total are made.

g) Measure the frequency at each of frequencies specified in 5.6.

h) Switch OFF the EUT but do not switch OFF the oscillator heater.

i) Lower the chamber temperature by not more that 10 °C, and allow the temperature inside the chamber to stabilize.

j) Repeat step f) through step i) down to the lowest specified temperature.

Frequency stability when varying supply voltage

Unless otherwise specified, these tests shall be made at ambient room temperature (+15 °C to +25 °C). An antenna shall be connected to the antenna output terminals of the EUT if possible. If the EUT is equipped with or uses an adjustable-length antenna, then it shall be fully extended.

a) Supply the EUT with nominal voltage or install a new or fully charged battery in the EUT. Turn ON the EUT and couple its output to a frequency counter or other frequency-measuring instrument.

NOTE—An instrument that has an adequate level of accuracy as specified by the procuring or regulatory agency is the recommended measuring instrument.

b) Tune the EUT to one of the number of frequencies required in 5.6. Adjust the location of the measurement antenna and the controls on the measurement instrument to obtain a suitable signal level (i.e., a level that will not overload the measurement instrument but is strong enough to allow measurement of the operating or fundamental frequency of the EUT).

c) Measure the frequency at each of the frequencies specified in 5.6.

d) Repeat the above procedure at 85% and 115% of the nominal supply voltage as described in 5.13.

4.4.4 Test Result

Serial Number:	3876-1	Test Date:	2025/9/1
Test Site:	RF	Test Mode:	Transmitting
Tester:	Leesin Xiang	Test Result:	Pass

Environmental Conditions:					
Temperature: (℃)	29.4	Relative Humidity: (%)	44	ATM Pressure: (kPa)	100.2

Test Equipment List and Details:

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Unknown	Antenna	Unknown	2501003	N/A	N/A
Unknown	Coaxial Cable	C-NJNJ-50	C-1000-01	2025/7/1	2026/6/30
R&S	EMI Test Receiver	ESR3	102453	2025/6/25	2026/6/24
BACL	TEMP&HUMI Test Chamber	BTH-150-40	30173	2024/9/6	2025/9/5
All-sun	Clamp Meter	EM305A	8348897	2025/8/18	2026/8/17
Daoxiang	AC Transformer	TDGC2-5KVA	F-08-EM011	N/A	N/A

** Statement of Traceability: Bay Area Compliance Laboratories Corp. (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).*

Test Data:

f_o = 13.56 MHz				
Temperature	**Voltage**	**Measured frequency**	**Frequency Error**	**Limit**
℃	**V_{AC}**	**MHz**	**Hz**	**Hz**
-20	240	13.561354	1354	±1356
-10		13.561321	1321	±1356
0		13.561334	1334	±1356
10		13.561325	1325	±1356
20		13.561346	1346	±1356
30		13.561317	1317	±1356
40		13.561336	1336	±1356
50		13.561347	1347	±1356
20	204	13.561319	1319	±1356
20	264	13.561322	1322	±1356

Note: the voltage range was declared by manufacturer▲.

4.5 Antenna Requirement

4.5.1 Applicable Standard

FCC §15.203

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. 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 manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited. This requirement does not apply to carrier current devices or to devices operated under the provisions of §§15.211, 15.213, 15.217, 15.219, 15.221, or §15.236. Further, this requirement does not apply to intentional radiators that must be professionally installed, such as perimeter protection systems and some field disturbance sensors, or to other intentional radiators which, in accordance with §15.31(d), must be measured at the installation site. However, the installer shall be responsible for ensuring that the proper antenna is employed so that the limits in this part are not exceeded.

4.5.2 Judgment

Please refer to the Antenna Information detail in Section 1.3.

EXHIBIT A - EUT PHOTOGRAPHS

Please refer to the attachment 2502W72823E-RF-EXP EUT external photographs and 2502W72823E-RF-INP EUT internal photographs.

EXHIBIT B - TEST SETUP PHOTOGRAPHS

Please refer to the attachment 2502W72823E-RF-00A-TSP test setup photographs.

EXHIBIT C - RF EXPOSURE EVALUATION

Applicable Standard

According to subpart §1.1310, systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy level in excess of the Commission's guidelines.

Limits for Maximum Permissible Exposure (MPE) (§1.1310, §2.1091)

(B) Limits for General Population/Uncontrolled Exposure				
Frequency Range (MHz)	**Electric Field Strength (V/m)**	**Magnetic Field Strength (A/m)**	**Power Density (mW/cm^2)**	**Averaging Time (minutes)**
0.3–1.34	614	1.63	*(100)	30
1.34–30	824/f	2.19/f	*(180/f²)	30
30–300	27.5	0.073	0.2	30
300–1500	/	/	f/1500	30
1500–100,000	/	/	1.0	30

f = frequency in MHz; * = Plane-wave equivalent power density;

According to §1.1310 and §2.1091 RF exposure is calculated.

Calculation formula:

Prediction of power density at the distance of the applicable MPE limit
$S = PG/4\pi R^2$ = power density (in appropriate units, e.g. mW/cm^2);
P = power input to the antenna (in appropriate units, e.g., mW);
G = power gain of the antenna in the direction of interest relative to an isotropic radiator, the power gain factor, is normally numeric gain;
R = distance to the center of radiation of the antenna (appropriate units, e.g., cm);

Calculated Data:

Radio	Operation Modes	Frequency (MHz)	Antenna Gain		Output power▲		Evaluation Distance (cm)	Power Density (mW/cm^2)	MPE Limit (mW/cm^2)
			(dBi)	(numeric)	(dBm)	(mW)			
Bluetooth/ WiFi Module	BT	2402-2480	3.02	2.00	7.59	5.74	20.00	0.002	1.0
	BLE	2402-2480	3.02	2.00	4.81	3.03	20.00	0.001	1.0
	WiFi 2.4G	2412-2462	3.02	2.00	15.92	39.08	20.00	0.016	1.0
NFC	NFC	13.56	/	/	-24.18	0.004	20.00	<<0.001	0.98

Note:
1. The Antenna Type of BT/BLE/WiFi 2.4G is PIFA.
2. For BT/BLE/WiFi 2.4G use conducted output power and NFC use EIRP.
3. The Conducted output power provided by manufacturer (Please refer to report No.: CN21212O 002, issued on 12/24/2021).
4. The device contains a certified Bluetooth & Wi-Fi module, FCC ID: 2AC7Z-ESPWROOM32UE, certified on 01/25/2022.

Note:
1. The output power provided by manufacturer
2. EIRP(dBm)=E(dBuV/m)-95.2 for 3 meters distance
   NFC E Field =71.02dBuV/m@3m
   ==> EIRP= -24.18dBm

Simultaneous transmission:

BT/BLE and WiFi can't transmit simultaneously, WiFi/BT/BLE and NFC can transmit simultaneously:

$$\sum_i \frac{S_i}{S_{Limit,i}} \le 1$$

$S_{WiFi}/S_{limit\text{-}WiFi} + S_{NFC}/S_{limit\text{-}NFC}$

=0.016/1.0+0.001/0.98

=0.017

< 1.0

Result: Compliant. The device compliant RF Exposure at 20cm distances.

******* END OF REPORT *******