TEST REPORT

Applicant Name:	SEAC SUB S.p.A.
Address:	Via D. Norero, 29, 16040 S.Colombano Certenoli (GE) - Italy
Report Number:	2401Z35976E-RF-00
FCC ID:	2BGTULTM

Test Standard (s)

FCC Part 15C

Sample Description

Product Type:	Led Tank Probe
Model No.:	Led Tank Probe
Multiple Model(s) No.:	N/A
Trade Mark:	N/A
Date Received:	2024/11/25
Issue Date:	2025/01/08

Test Result:	Pass▲

▲ In the configuration tested, the EUT complied with the standards above.

Prepared and Checked By:

Bruce Lin

Bruce Lin
RF Engineer

Approved By:

Michelle Zeng

Michelle Zeng
RF Supervisor

Note: The information marked# is provided by the applicant, the laboratory is not responsible for its authenticity and this information can affect the validity of the result in the test report. Customer model name, addresses, names, trademarks etc. are included.

TABLE OF CONTENTS

DOCUMENT REVISION HISTORY

Revision Number	Report Number	Description of Revision	Date of Revision
0	2401Z35976E-RF-00	Original Report	2025/01/08

GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

Product	Led Tank Probe
Tested Model	Led Tank Probe
Multiple Model(s)	N/A
Frequency Range	12kHz
Input Voltage	DC 3.0V from battery
E-field Strength	87.92 dBuV/m@3m
Modulation type	BPSK
Sample serial number	2UWP-1 (Assigned by BACL, Shenzhen)
Sample/EUT Status	Good condition
Adapter Information	N/A

Objective

This test report is in accordance with Part 2, Subpart J, and Part 15, Subparts A and C of the Federal Communications Commission's rules.

The objective is to determine the compliance of EUT with FCC rules, section 15.203, 15.205, 15.209 and 15.215.

Test Methodology

All measurements contained in this report were conducted with ANSI C63.10-2013, American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices.

All emissions measurement was performed at Bay Area Compliance Laboratories Corp. (Shenzhen). The radiated testing was performed at an antenna-to-EUT distance of 3 meters.

Measurement Uncertainty

Parameter		Uncertainty
Occupied Channel Bandwidth		109.2kHz(k=2, 95% level of confidence)
RF Frequency		56.6Hz(k=2, 95% level of confidence)
AC Power Lines Conducted Emissions	9kHz-150kHz	3.63dB(k=2, 95% level of confidence)
	150kHz-30MHz	3.66dB(k=2, 95% level of confidence)
Radiated Emissions	0.009MHz~30MHz	3.60dB(k=2, 95% level of confidence)
	30MHz~200MHz (Horizontal)	5.32dB(k=2, 95% level of confidence)
	30MHz~200MHz (Vertical)	5.43dB(k=2, 95% level of confidence)
	200MHz~1000MHz (Horizontal)	5.77dB(k=2, 95% level of confidence)
	200MHz~1000MHz (Vertical)	5.73dB(k=2, 95% level of confidence)
Temperature		±1℃
Humidity		±1%
Supply voltages		±0.4%

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

Test Facility

The Test site used by Bay Area Compliance Laboratories Corp. (Shenzhen) to collect test data is located on the 5F(B-West) , 6F, 7F, the 3rd Phase of Wan Li Industrial Building D, Shihua Rd, FuTian Free Trade Zone, Shenzhen, 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. : 715558, the FCC Designation No. : CN5045.

SYSTEM TEST CONFIGURATION

Description of Test Configuration

The system was configured for testing in a test mode

EUT Exercise Software

No software used in test.

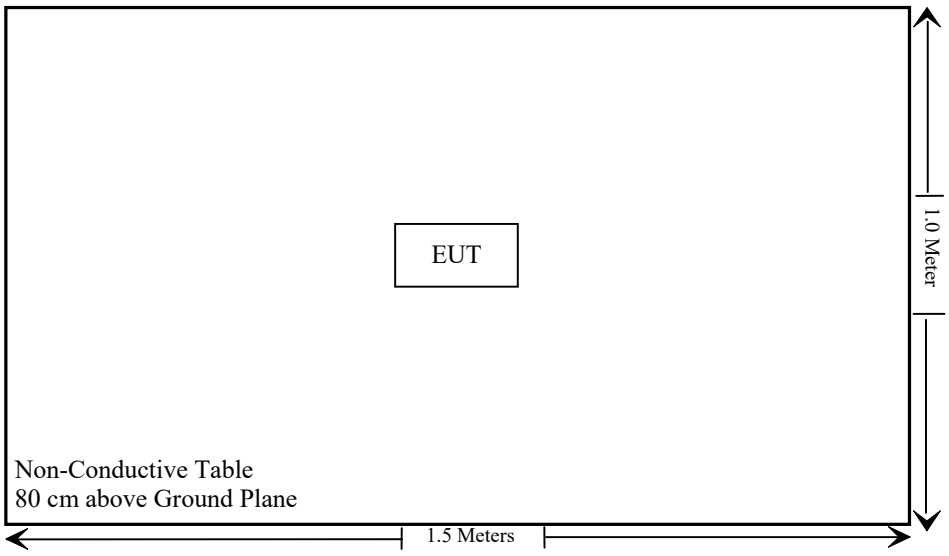
Local Support Equipment

Manufacturer	Description	Model	Serial Number
/	/	/	/

External I/O Cable

Cable Description	Length (m)	From Port	To
/	/	/	/

Block Diagram of Test Setup



SUMMARY OF TEST RESULTS

FCC Rules	Description of Test	Result
§1.1310 & §2.1093	RF Exposure	Compliant
FCC§15.203	Antenna Requirement	Compliant
FCC§15.207	AC Line Conducted Emission	Not Applicable
§15.209 §15.205	Radiated Emission Test	Compliant
§15.215 (c)	20 dB Bandwidth	Compliant

Not Applicable: the device was powered by battery.

TEST EQUIPMENT LIST

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Rohde & Schwarz	EMI Test Receiver	ESR3	102455	2024/01/16	2025/01/15
Sonoma instrument	Pre-amplifier	310 N	186238	2024/05/21	2025/05/20
Sunol Sciences	Broadband Antenna	JB1	A040904-1	2023/07/20	2026/07/19
Unknown	Cable	Chamber A Cable 1	N/A	2024/06/18	2025/06/17
Unknown	Cable	XH500C	J-10M-A	2024/06/18	2025/06/17
BACL	Active Loop Antenna	1313-1A	4031911	2024/05/14	2027/05/13
Unknown	Cable	2Y194	0735	2024/05/21	2025/05/20
Unknown	Cable	PNG214	1354	2024/05/21	2025/05/20
Audix	EMI Test software	E3	19821b(V9)	NCR	NCR

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

FCC§1.1310 & §2.1093- RF EXPOSURE

Applicable Standard

According to KDB447498 D01 General RF Exposure Guidance v06: 4.3. General SAR test exclusion guidance

c) For frequencies below 100 MHz, the following may be considered for SAR test exclusion (also illustrated in Appendix C):

1) For *test separation distances* > 50 mm and < 200 mm, the power threshold at the corresponding test separation distance at 100 MHz in step b) is multiplied by [1 + log(100/$f_{(MHz)}$)]

2) For *test separation distances* ≤ 50 mm, the power threshold determined by the equation in c) 1) for 50 mm and 100 MHz is multiplied by ½

3) SAR measurement procedures are not established below 100 MHz

Measurement Result

The power of EUT: E Field@3m is 87.92dBuV/m = -7.28dBm (0.187mW)
Note: E[dBμV/m] = EIRP[dBm] + 95.2 for d = 3 m.

SAR test exclusion threshold for 0.012MHz separation distance < 50mm

=[474*(1 + log(100/f(MHz)))]/2

= 1166mW

>0.187mW

Result: Compliant.

FCC§15.203 – ANTENNA REQUIREMENT

Applicable Standard

According to 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.

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.

Antenna Connected Construction

The EUT has one coil antenna arrangement which was permanently attached, fulfill the requirement of this section. Please refer to the EUT photos.

Result: Compliant.

FCC §15.205 & §15.209 - RADIATED EMISSIONS TEST

Applicable Standard

As per FCC Part 15.209

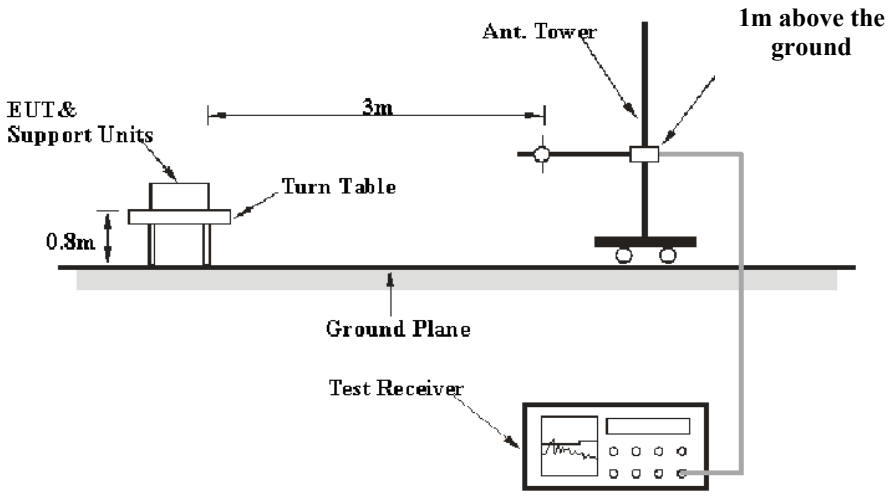
(a) Except as provided elsewhere in this subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

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

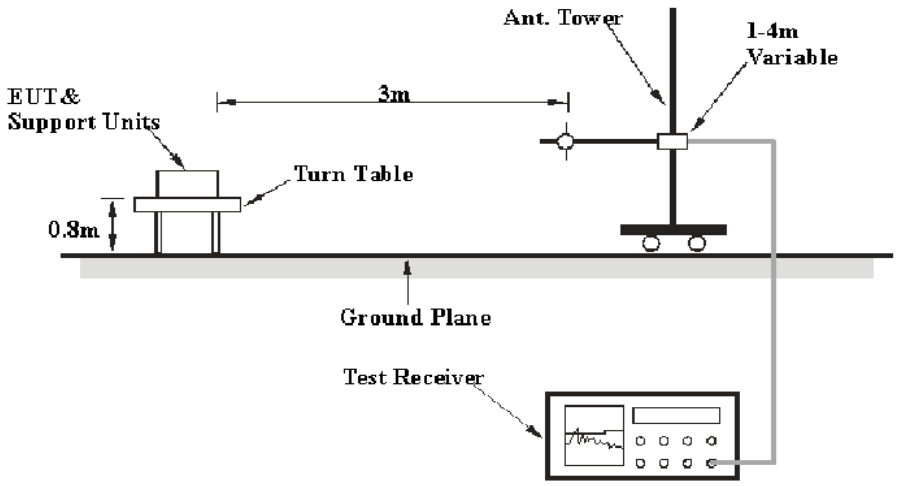
**Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this part, e.g., §§15.231 and 15.241.

EUT Setup

9 kHz-30MHz:



30MHz-1GHz:



The radiated emission tests were performed in the 3-meter chamber test site, using the setup accordance with the ANSI C63.10-2013. The specification used was the FCC Part Subpart C limits.

The spacing between the peripherals was 10 cm.

EMI Test Receiver & Spectrum Analyzer Setup

The EMI test receiver & Spectrum Analyzer Setup were set with the following configurations:

Frequency Range	RBW	Video B/W	IF B/W	Measurement
9 kHz – 150 kHz	/	/	200 Hz	QP
	300 Hz	1 kHz	/	PK
150 kHz – 30 MHz	/	/	9 kHz	QP
	10 kHz	30 kHz	/	PK
30 MHz – 1000 MHz	/	/	120 kHz	QP
	100 kHz	300 kHz	/	PK

Corrected Amplitude & Over Limit/Margin Calculation

The Corrected Amplitude is calculated by adding the Antenna Factor and Cable Loss, and subtracting the Amplifier Gain from the Amplitude reading. The basic equation is as follows:

Corr. Ampl. = Meter Reading + Antenna Factor + Cable Loss - Amplifier Gain

The "**Over Limit/Margin**" column of the following data tables indicates the degree of compliance with the applicable limit. For example, an over limit/margin of -7dB means the emission is 7dB below the limit. The equation for calculation is as follows:

Over Limit/Margin = Level/Result - Limit.
Level/Result = Reading level + Factor

Test Data

Environmental Conditions

Temperature:	25.2~26.0℃
Relative Humidity:	52~54 %
ATM Pressure:	101.6 kPa

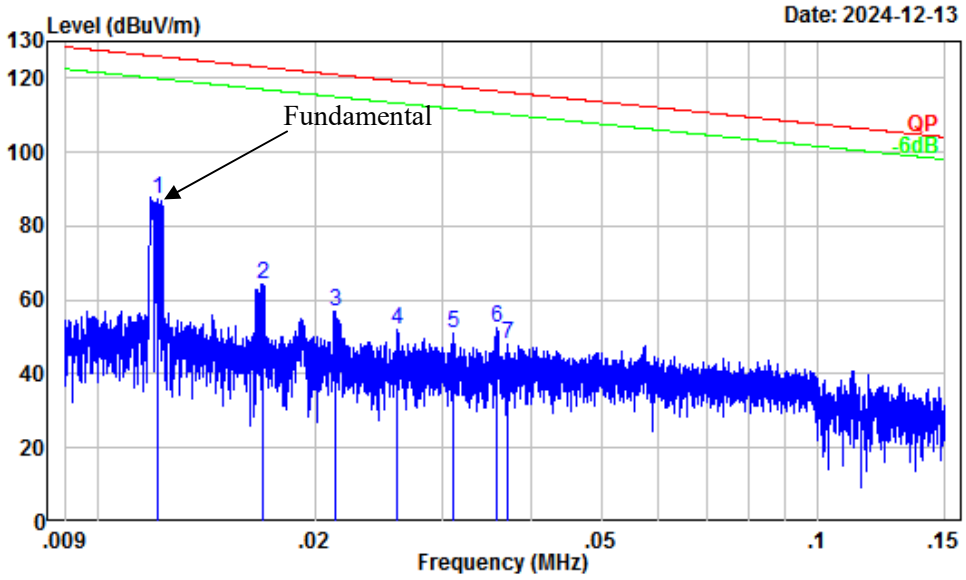
The testing was performed by Anson Su on 2024-12-12 and 2024-12-13.

Test Mode: Transmitting

Note: Pre-scan EUT in x-axis, y-axis, z-axis, the worst case is x-axis as below.

Ground-parallel:

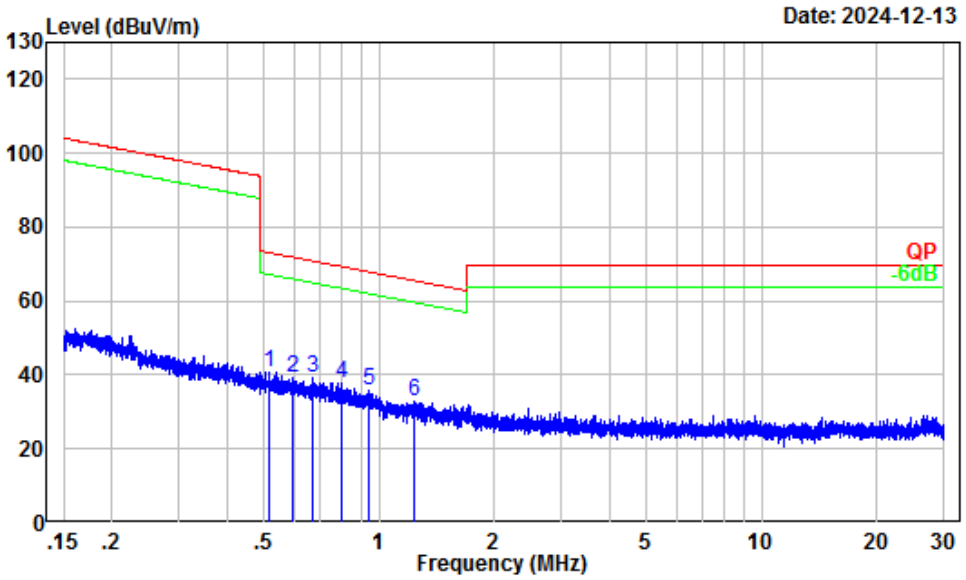
9 kHz~150 kHz



Site : Chamber A
Condition : 3m
Project Number : 2401Z35976E-RF
Test Mode : Transmitting
Note : Ground-parallel
Detector Peak RBW: 0.3KHz VBW:1KHz
Tester : Anson Su

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	0.01	31.90	55.61	87.51	125.94	-38.43	Peak
2	0.02	30.97	33.30	64.27	123.00	-58.73	Peak
3	0.02	30.14	26.92	57.06	121.02	-63.96	Peak
4	0.03	29.25	22.92	52.17	119.29	-67.12	Peak
5	0.03	28.39	22.68	51.07	117.75	-66.68	Peak
6	0.04	27.89	24.51	52.40	116.52	-64.12	Peak
7	0.04	27.75	20.38	48.13	116.20	-68.07	Peak

150 kHz~30 MHz

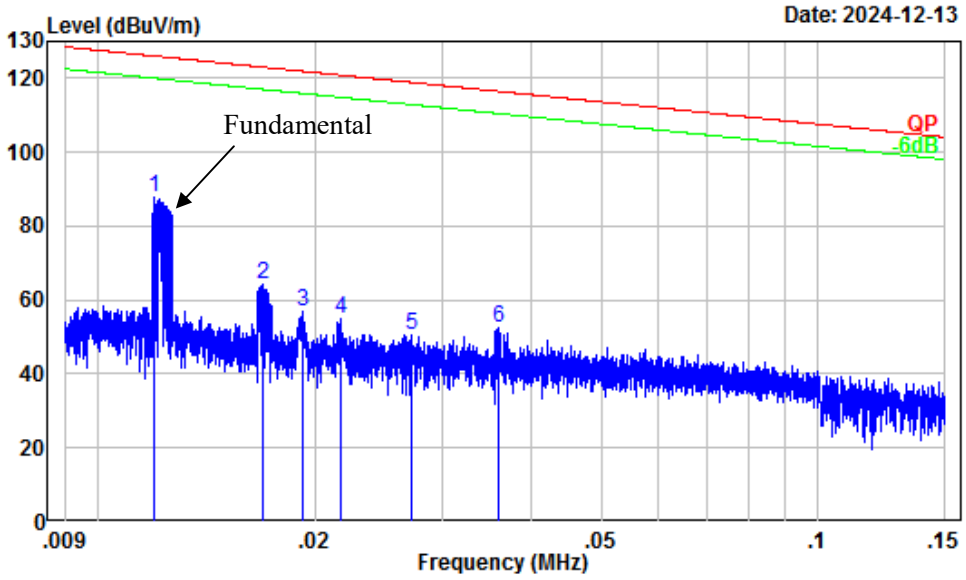


Site : Chamber A
Condition : 3m
Project Number : 2401Z35976E-RF
Test Mode : Transmitting
Note : Ground-parallel
Detector Peak RBW: 10KHz VBW:30KHz
Tester : Anson Su

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	0.51	6.23	34.72	40.95	73.37	-32.42	Peak
2	0.59	5.24	34.16	39.40	72.09	-32.69	Peak
3	0.67	4.27	34.89	39.16	70.99	-31.83	Peak
4	0.80	2.70	35.09	37.79	69.45	-31.66	Peak
5	0.94	1.65	34.33	35.98	68.02	-32.04	Peak
6	1.24	0.54	32.10	32.64	65.60	-32.96	Peak

Perpendicular:

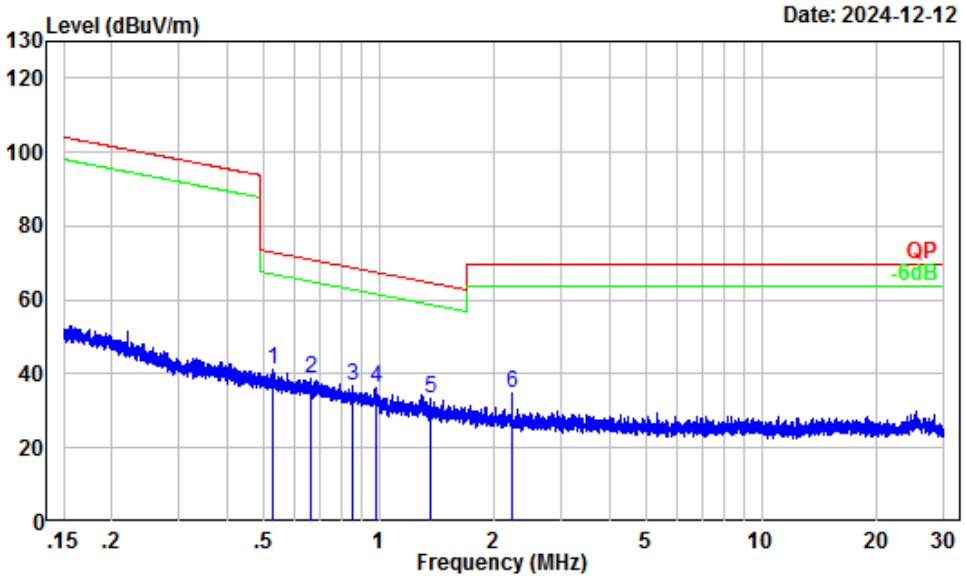
9 kHz~150 kHz



Site : Chamber A
Condition : 3m
Project Number : 2401Z35976E-RF
Test Mode : Transmitting
Note : Perendicular
Detector Peak RBW: 0.3KHz VBW:1KHz
Tester : Anson Su

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	0.01	31.92	55.77	87.69	126.03	-38.34	Peak
2	0.02	30.97	33.19	64.16	123.00	-58.84	Peak
3	0.02	30.54	26.43	56.97	121.91	-64.94	Peak
4	0.02	30.07	24.90	54.97	120.86	-65.89	Peak
5	0.03	29.01	21.67	50.68	118.87	-68.19	Peak
6	0.04	27.88	24.75	52.63	116.49	-63.86	Peak

150 kHz~30 MHz

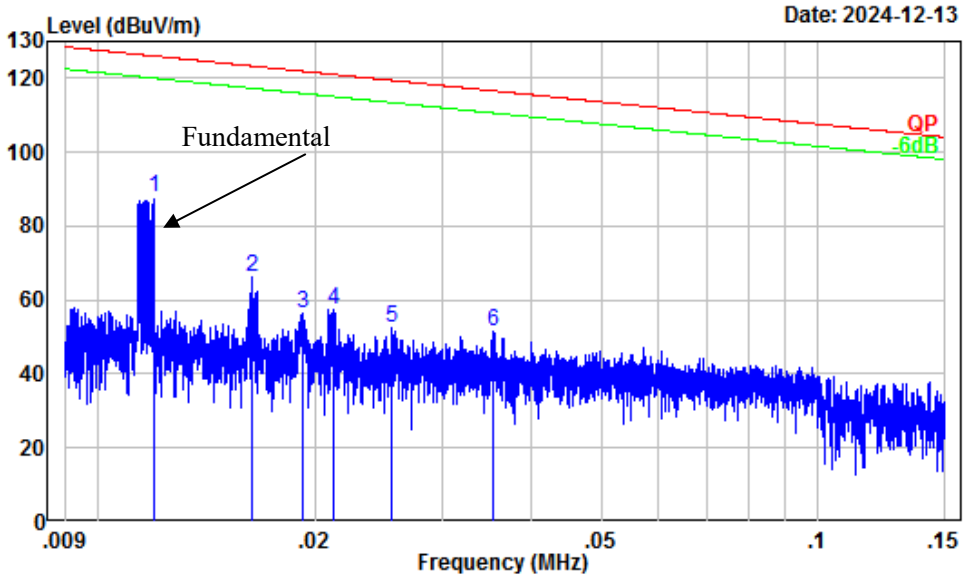


Site : Chamber A
Condition : 3m
Project Number : 2401Z35976E-RF
Test Mode : Transmitting
Note : Perendicular
Detector Peak RBW: 10KHz VBW:30KHz
Tester : Anson Su

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	0.53	6.06	35.08	41.14	73.14	-32.00	Peak
2	0.67	4.35	34.17	38.52	71.08	-32.56	Peak
3	0.85	2.31	34.40	36.71	68.89	-32.18	Peak
4	0.98	1.33	34.94	36.27	67.62	-31.35	Peak
5	1.37	0.18	33.40	33.58	64.71	-31.13	Peak
6	2.22	-1.72	36.76	35.04	69.54	-34.50	Peak

Parallel:

9 kHz~150 kHz

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Site              : Chamber A
Condition         : 3m
Project Number    : 2401Z35976E-RF
Test Mode         : Transmitting
Note              : Parallel
Detector Peak RBW: 0.3KHz VBW:1KHz
Tester            : Anson Su
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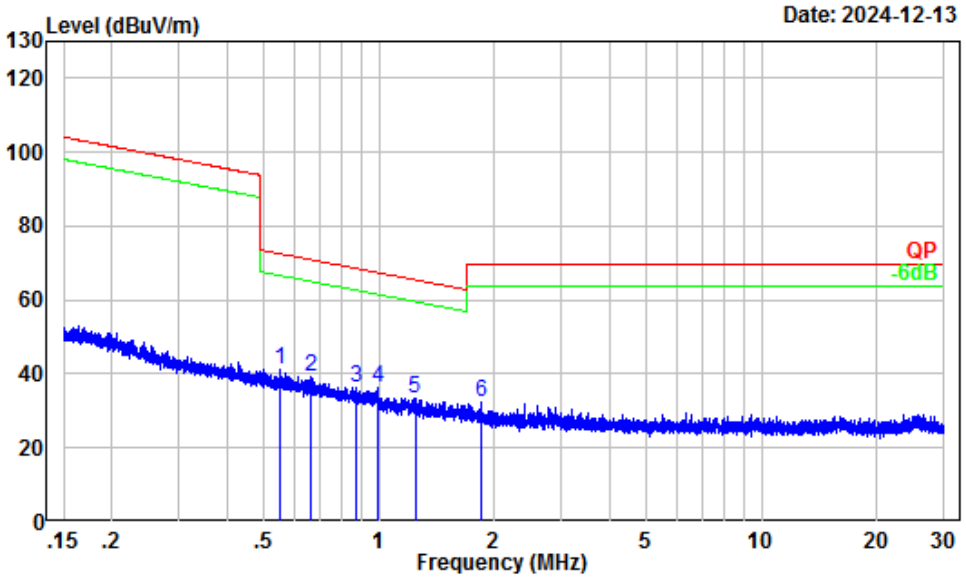
	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	0.01	31.92	56.00	87.92	126.02	-38.10	Peak
2	0.02	31.10	35.07	66.17	123.34	-57.17	Peak
3	0.02	30.55	25.73	56.28	121.93	-65.65	Peak
4	0.02	30.16	27.36	57.52	121.05	-63.53	Peak
5	0.03	29.33	23.15	52.48	119.43	-66.95	Peak
6	0.04	27.93	23.58	51.51	116.63	-65.12	Peak

150 kHz~30 MHz

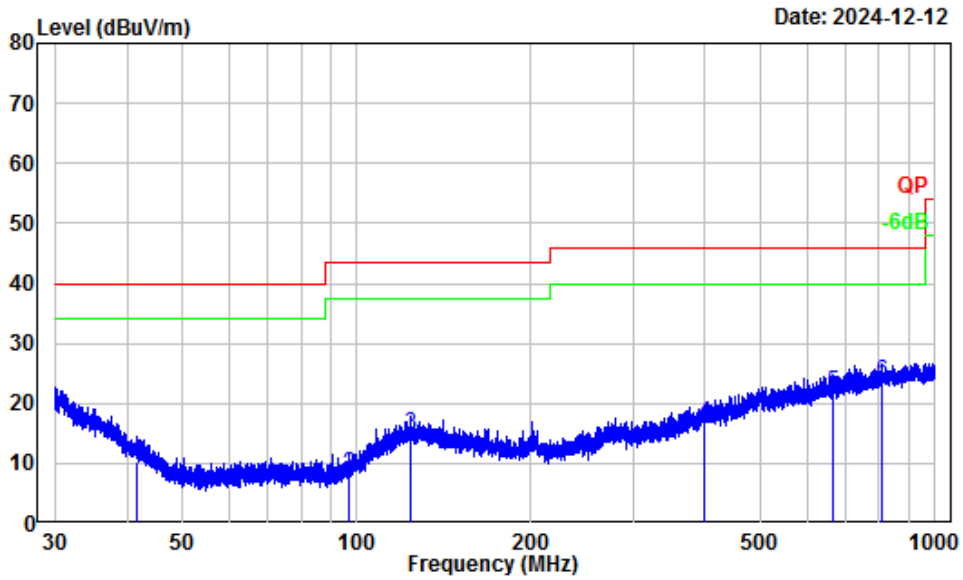


Site : Chamber A
Condition : 3m
Project Number : 2401Z35976E-RF
Test Mode : Transmitting
Note : Parallel
Detector Peak RBW: 10KHz VBW:30KHz
Tester : Anson Su

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	0.55	5.76	35.40	41.16	72.75	-31.59	Peak
2	0.67	4.36	35.02	39.38	71.08	-31.70	Peak
3	0.87	2.19	34.27	36.46	68.73	-32.27	Peak
4	0.99	1.26	35.01	36.27	67.55	-31.28	Peak
5	1.24	0.52	33.02	33.54	65.54	-32.00	Peak
6	1.84	-1.16	33.59	32.43	69.54	-37.11	Peak

30MHz~1GHz:

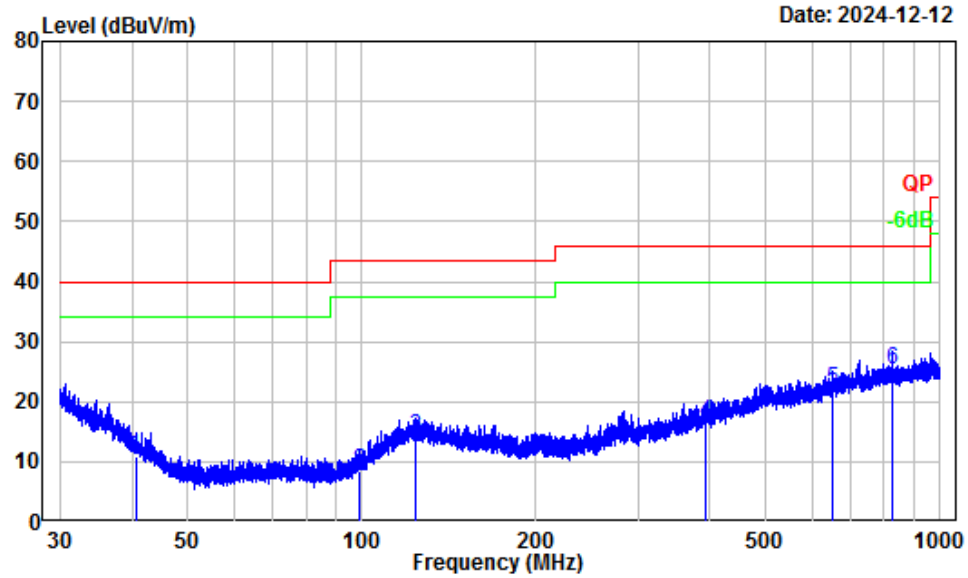
Horizontal



Site : Chamber A
Condition : 3m Horizontal
Project Number : 2401Z35976E-RF
Test Mode : Transmitting
Detector QP RBW: 120KHz
Tester : Anson Su

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	41.59	-13.54	23.87	10.33	40.00	-29.67	QP
2	97.11	-16.78	24.88	8.10	43.50	-35.40	QP
3	124.02	-11.14	25.89	14.75	43.50	-28.75	QP
4	400.08	-8.41	24.98	16.57	46.00	-29.43	QP
5	664.35	-3.88	25.68	21.80	46.00	-24.20	QP
6	809.56	-2.05	25.46	23.41	46.00	-22.59	QP

Vertical



Site : Chamber A
Condition : 3m Vertical
Project Number : 2401Z35976E-RF
Test Mode : Transmitting
Detector QP RBW: 120KHz
Tester : Anson Su

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	40.58	-12.77	23.66	10.89	40.00	-29.11	QP
2	99.27	-16.12	24.55	8.43	43.50	-35.07	QP
3	123.70	-11.14	25.23	14.09	43.50	-29.41	QP
4	392.61	-8.76	25.27	16.51	46.00	-29.49	QP
5	651.94	-4.08	26.21	22.13	46.00	-23.87	QP
6	826.77	-1.93	27.25	25.32	46.00	-20.68	QP

FCC §15.215 (c) – 20 dB EMISSION BANDWIDTH

Applicable Standard

According to § 15.215 (c)

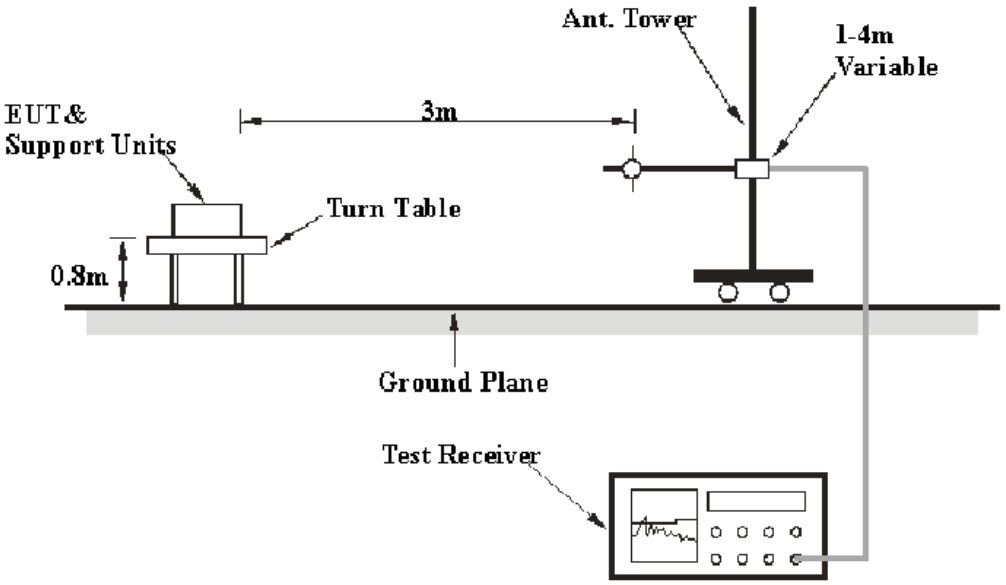
Intentional radiators operating under the alternative provisions to the general emission limits, as contained in §§ 15.217 through 15.257 and in subpart E of this part, must be designed to ensure that the 20 dB bandwidth of the emission, or whatever bandwidth may otherwise be specified in the specific rule section under which the equipment operates, is contained within the frequency band designated in the rule section under which the equipment is operated. In the case of intentional radiators operating under the provisions of subpart E, the emission bandwidth may span across multiple contiguous frequency bands identified in that subpart. 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.

Test Procedure

Per ANSI C63.10-2013 §6.4 & §6.9.

Measure the frequency difference of two frequencies that were attenuated 20 dB from the reference level. Record the frequency difference as the emission bandwidth.



Test Data

Environmental Conditions

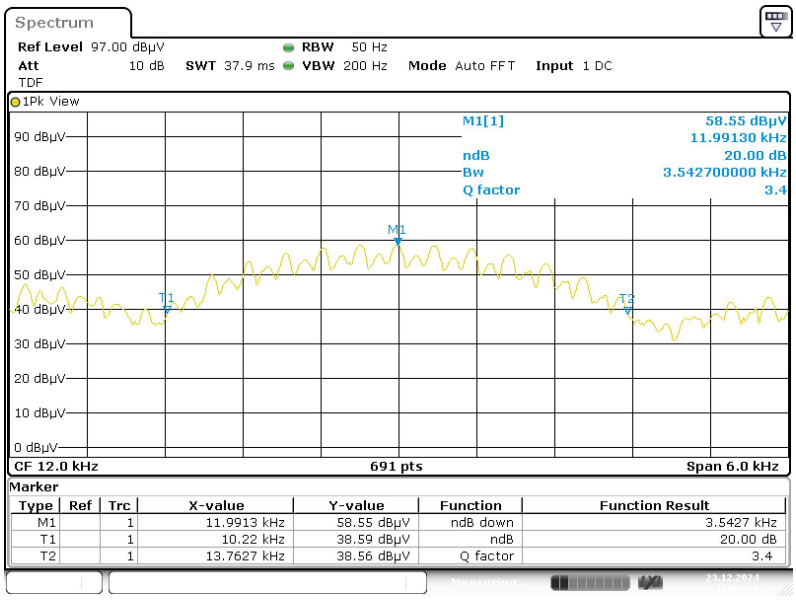
Temperature:	25 °C
Relative Humidity:	53 %
ATM Pressure:	101 kPa

The testing was performed by Anson Su on 2024-12-23.

EUT operation mode: Transmitting

Test Result: Compliant. *Please refer to following table and plot.*

Channel Frequency (kHz)	20 dB Emission Bandwidth (kHz)
12	3.5427



EUT PHOTOGRAPHS

Please refer to the attachment 2401Z35976E-RF External photo and 2401Z35976E-RF Internal photo.

TEST SETUP PHOTOGRAPHS

Please refer to the attachment 2401Z35976E-RF Test Setup photo.

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