

TEST REPORT FOR CERTIFICATION

On Behalf of

TLV CO., LTD.

TrapMan

Model No.: TM8

Brand: TLV

FCC ID: H3RTLVTM080

Prepared for : TLV CO., LTD.

881 Nagasuna, Noguchi, Kakogawa, Hyogo 675-8511 Japan

Prepared By : Audix Technology (Shenzhen) Co., Ltd.

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Report Number : ACS-F24130

Date of Test : Jul.12~23, 2024

Date of Report : Aug.26, 2024

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Appendix A. Photograph of Test

Appendix B. Photo of the EUT

TEST REPORT CERTIFICATION

Applicant : TLV CO., LTD.
Manufacture : TLV CO., LTD.
EUT Description : TrapMan
FCC ID : H3RTLVTM080
(A) Model No. : TM8
(B) Brand : TLV
(C) Test Voltage : DC 3.7V

Tested for comply with:
FCC CFR 47 Part 15 Subpart C

Test procedure used:
ANSI C63.10:2013

The device described above is tested by AUDIX TECHNOLOGY (SHENZHEN) CO., LTD. to confirm comply with all the FCC Part 15 Subpart C requirements.

The test results are contained in this test report and AUDIX TECHNOLOGY (SHENZHEN) CO., LTD. is assumed full responsibility for the accuracy and completeness of these tests. Also, this report shows that the Equipment Under Test (EUT) is to be technically compliant with the FCC and IC requirements.

This Report is made under FCC Part 2.1075. No modifications were required during testing to bring this product into compliance.

This report applies to single evaluation of one sample of above mentioned product. This report shall not be reproduced in part without written approval of AUDIX TECHNOLOGY (SHENZHEN) CO., LTD.

Date of Test : Jul.12~23, 2024 Report of date: Aug.26, 2024

Prepared by : Dora Yang / Assistant
Reviewer by : Thomas Chen / Assistant Manager



Approved & Authorized Signer : Sunny Lu / Manager

1. SUMMARY OF STANDARDS AND RESULTS

1.1. Description of Standards and Results

The EUT have been tested according to the applicable standards as referenced below.

EMISSION		
Description of Test Item	Standard	Results
Conducted Emission Test	FCC Part 15: 15.207 ANSI C63.10: 2013	N/A
Radiated Emission Test	FCC Part 15: 15.205, 15.209 ANSI C63.10: 2013	PASS
20dB Bandwidth Test	FCC Part 15: 15.215	PASS

Note: N/A is mean Not Application

2. GENERAL INFORMATION

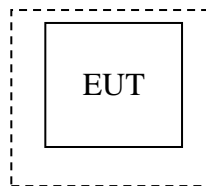
2.1. Description of Equipment Under Test

Applicant	TLV CO., LTD.
Applicant Address	881 Nagasuna, Noguchi, Kakogawa, Hyogo 675-8511 Japan
Manufacturer	TLV CO., LTD.
Manufacturer Address	881 Nagasuna, Noguchi, Kakogawa, Hyogo 675-8511 Japan
Product	TrapMan
Brand	TLV
Model No.	TM8
Frequency Range	125kHz
Modulation	ASK
Sample Type	Mass production
Date of Receipt	Jun.27,2024
Date of Test	Jul.12~23, 2024

2.2. Tested Supporting System Details

[None]

2.3. Block diagram of connection between the EUT and simulators



(EUT: TrapMan)

2.4. Test Facility

Site Description

Name of Firm : Audix Technology (Shenzhen) Co., Ltd.
 No. 6, Kefeng Road, Science & Technology Park, Nanshan District, Shenzhen, Guangdong, China

EMC Lab.

: Certificated by ISED, Canada
 Company Number: 5183A
 CAB identifier: CN0034
 Valid Date: Mar.31, 2025

Certificated by FCC, USA
 Designation No.: CN5022
 Valid Date: Mar.31, 2025

Accredited by NVLAP, USA
 NVLAP Code: 200372-0
 Valid Date: Mar.31, 2026

2.5. Measurement Uncertainty (95% confidence levels, k=2)

Test Item	Uncertainty
Uncertainty for Radiation Emission test in 3m chamber	± 3.8dB(30~200MHz, Polarization: H)
	± 3.8dB(30~200MHz, Polarization: V)
	± 4.0dB(200M~1GHz, Polarization: H)
	± 4.0dB(200M~1GHz, Polarization: V)
Uncertainty for Radiation spurious emission at frequency below 30MHz	± 2.6dB(9kHz~30MHz)
Uncertainty for DC power test	±0.1%
Uncertainty for test site temperature and humidity	±0.6°C
	± 3%

3. POWER LINE CONDUCTED EMISSION TEST

According to Paragraph (c) of FCC Part 15 section 15.207, Tests 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. Host device is battery powered and does not operate when host device is connected to AC lines.

4. RADIATED EMISSION TEST

4.1. Test Equipment

Frequency Range: 30-1000MHz

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	3m Chamber(NSA)	AUDIX	N/A	N/A	Aug.11,22	3Year
2.	3m Chamber(SE)	AUDIX	N/A	N/A	Sep.16,22	3 Year
3.	Signal Analyzer	Rohde & Schwarz	FSV40	101608	Nov.07,23	1 Year
4.	Tri-log-Broadband Antenna	SCHWARZBECK	VULB 9168	429	Oct.10,23	1 Year
5.	NSA Cable	HUBER+SUHNER	CFD400NL-LW	No.3+190411	Sep.20,23	1 Year
6.	Coaxial Switch	Anritsu	MP59B	6201397223	Mar.17,24	1 Year
7.	EMI Test Receiver	Rohde & Schwarz	ESR3	101931	Mar.17,24	1 Year
8.	Amplifier	HP	8447D	2944A11159	Mar.17,24	1 Year
9.	Test Software	AUDIX	e3	6.100913a	N/A	N/A

Note: N/A means Not applicable.

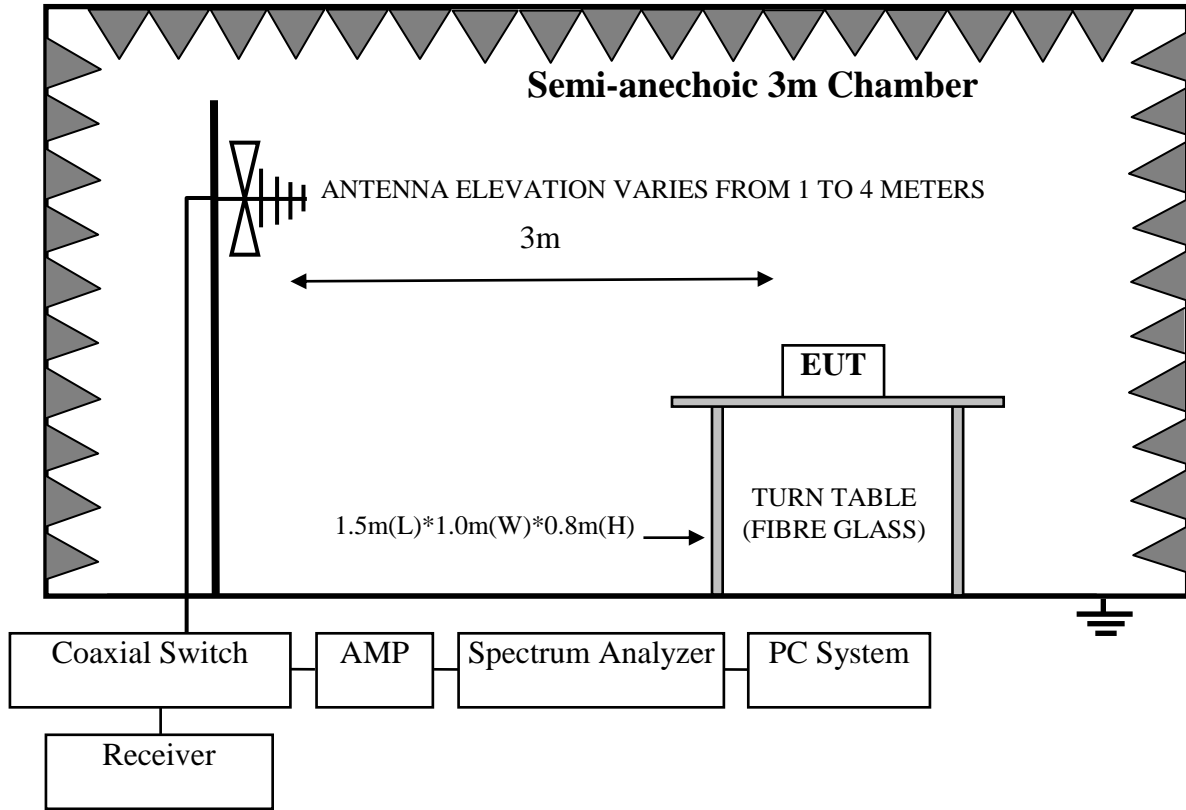
Frequency Range: Below 30MHz

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	10m Chamber(NSA)	AUDIX	N/A	N/A	Aug.12,22	3Year
2.	10m Chamber(SE)	AUDIX	N/A	N/A	Sep.16,22	3 Year
3.	Active Receive Loop Antenna	SCHWARZBECK	FMZB 1513-60B	00035	Mar.25,24	1 Year
4.	EMI Test Receiver	Rohde & Schwarz	ESR3	102891	Sep.16,23	1 Year
5.	RF Cable	SPUMA	CFD400NL-LW	NO.4	Mar.17,24	1 Year
6.	Signal Analyzer	Rohde & Schwarz	FSV30	103669	Sep.16,23	1 Year
7.	Test Software	AUDIX	e3	6.100913a	N/A	N/A

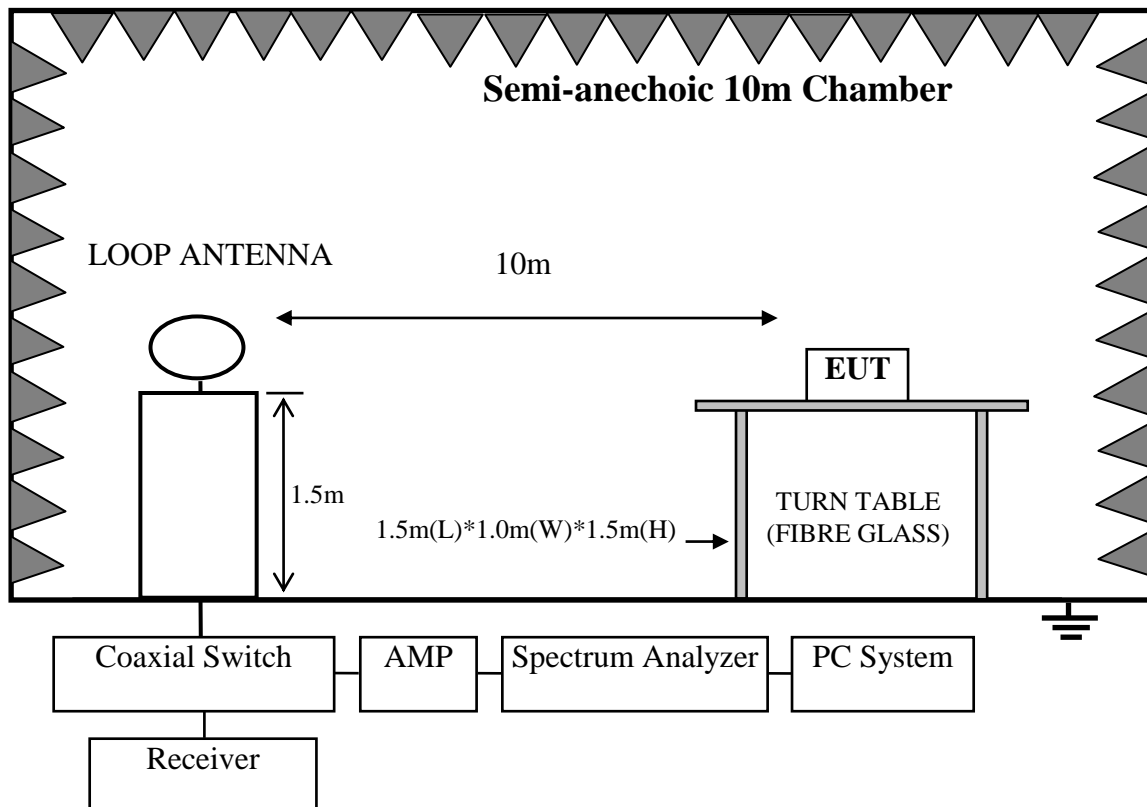
Note: N/A means Not applicable.

4.2. Block Diagram of Test Setup

Frequency Range: 30-1000MHz



Frequency Range: Below 30MHz



4.3. Radiated Emission Limit

FREQUENCY MHz	DISTANCE Meters	FIELD STRENGTHS LIMIT	
		μV/m	dB(μV)/m
30 ~ 88	3	100	40.0
88 ~ 216	3	150	43.5
216 ~ 960	3	200	46.0
960 ~ 1000	3	500	54.0
Above 1000	3	74.0 dB(μV)/m (Peak) 54.0 dB(μV)/m (Average)	

- Remark: (1) Emission level = Antenna Factor + Cable Loss + Reading
 (2) The smaller limit shall apply at the cross point between two frequency bands.
 (3) Distance is the distance in meters between the measuring instrument, antenna and the closest point of any part of the device or system.

Radiated emission Limit(Below 30MHz)

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

- Remark: (1) Emission level $dB\mu V = 20 \log$ Emission level $\mu V/m$
 (2) In the emission table above, the tighter limit applies at the band edges.
 (3) The limit 1.705MHz to 30MHz in clause 4.3 are specified at 30 meters, and measurements were made at 10 meters, the limit is translated to 10 meters by using a formula as follows:
 $Limit_{10m} = Limit_{30m} + 40\log(30m/10m)$ or $Limit_{10m} = Limit_{300m} + 40\log(300m/10m)$

4.4. 15.205 Restricted bands of operation

MHz	MHz	MHz	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)

All the emissions appearing within 15.205 restricted frequency bands shall not exceed the limits shown in 15.209, all the other emissions shall be at least 20dB below the fundamental emissions, or comply with 15.209 limits.

4.5. EUT Configuration on Test

The following equipment are installed on Radiated Emission Test to meet the commission requirements and operating regulations in a manner which tends to maximize its emission characteristics in normal application.

4.6. Operating Condition of EUT

- 4.6.1. Setup the EUT as shown in Section 4.2.
- 4.6.2. Turn on the power of all equipments.
- 4.6.3. Let the EUT worked in test mode (Tx Mode) and tested it.

4.7. Test Procedure

The EUT and its simulators are placed on a turn table, which is 0.8 meter high above ground. The turn table can rotate 360 degrees to determine the position of the maximum emission level. The EUT is set 3 meters away from the receiving antenna, which is mounted on a antenna tower. The antenna can be moved up and down between 1 meter and 4 meters to find out the maximum emission level. Broadband antenna (calibrated bilog antenna) is used as receiving antenna. Both horizontal and vertical polarization of the antenna is set on Test. In order to find the maximum emission levels, all of the interface cables must be manipulated according to ANSI C63.10-2013 on radiated emission Test.

This test was performed with EUT in X, Y, Z position, and the worse case was found when EUT in X position as the test photo indicated.

The bandwidth of the EMI test receiver is set at 120kHz for frequency range from 30MHz to 1000 MHz.

For emissions below 30MHz:

This test was performed on anechoic chamber with a conductive ground plane, EUT was put to 1.5m high turn table and at a distance of 10m from test antenna.

The bandwidth of the Spectrum's VBW is set at 3MHz and RBW is set at 1MHz for peak emissions measurement above 1GHz and 1MHz RBW, 10Hz VBW for average emissions measure above 1GHz

4.8. Radiated Emission Test Results

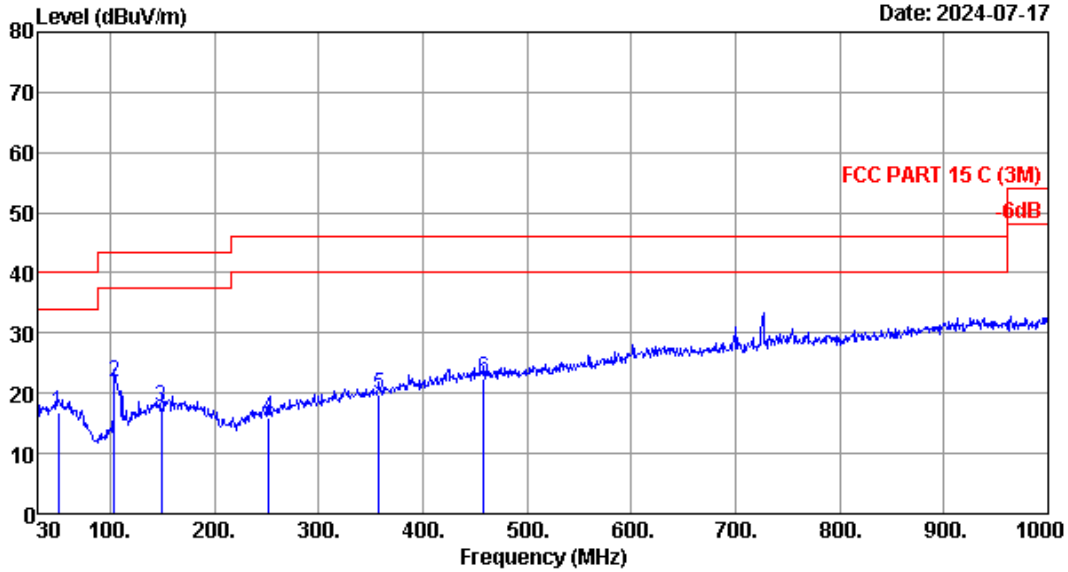
PASS.

Frequency Range: 30-1000MHz

Data: 7

File: E:\2024 Report Data\CCSA\1Z2406103-RF.EM6 (8)

Date: 2024-07-17

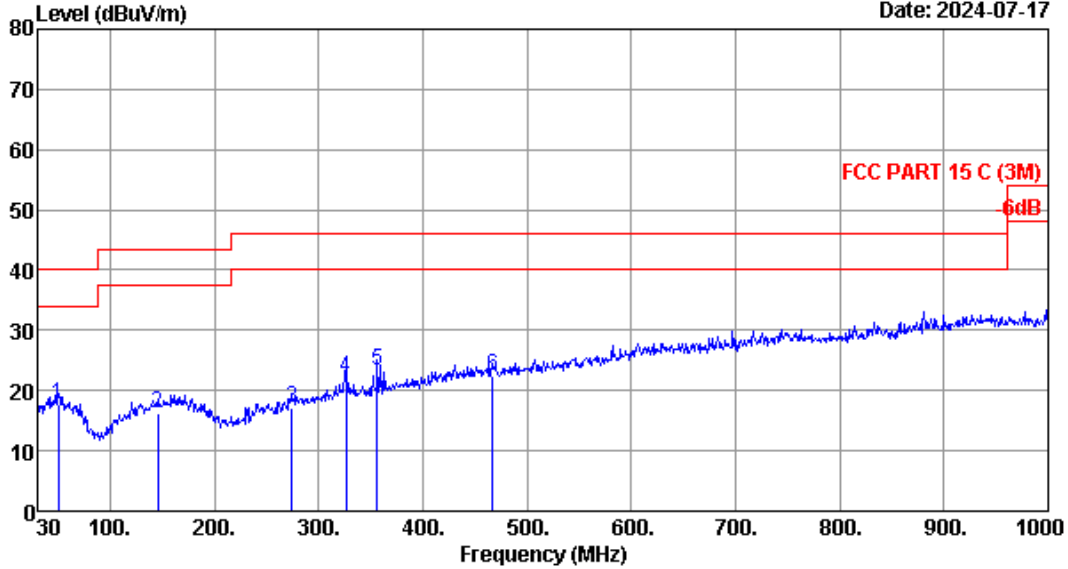


Site no. : 3m Chamber Data no. : 7
 Dis. / Ant. : 3m 2023 VULB 9168-429 Ant. pol. : HORIZONTAL
 Limit : FCC PART 15 C (3M)
 Env. / Ins. : 23.7°C/53% Engineer : Abel
 EUT :
 Power rating :
 Test Mode : TX Mode

No.	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	50.370	19.70	0.65	-3.43	16.92	40.00	23.08	QP
2	103.720	15.84	0.88	5.21	21.93	43.50	21.57	QP
3	149.310	19.40	1.01	-2.78	17.63	43.50	25.87	QP
4	252.130	17.94	1.33	-3.35	15.92	46.00	30.08	QP
5	357.860	20.57	1.54	-2.36	19.75	46.00	26.25	QP
6	458.740	23.20	1.75	-2.41	22.54	46.00	23.46	QP

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
 2. The emission levels that are 20dB below the official limit are not reported.

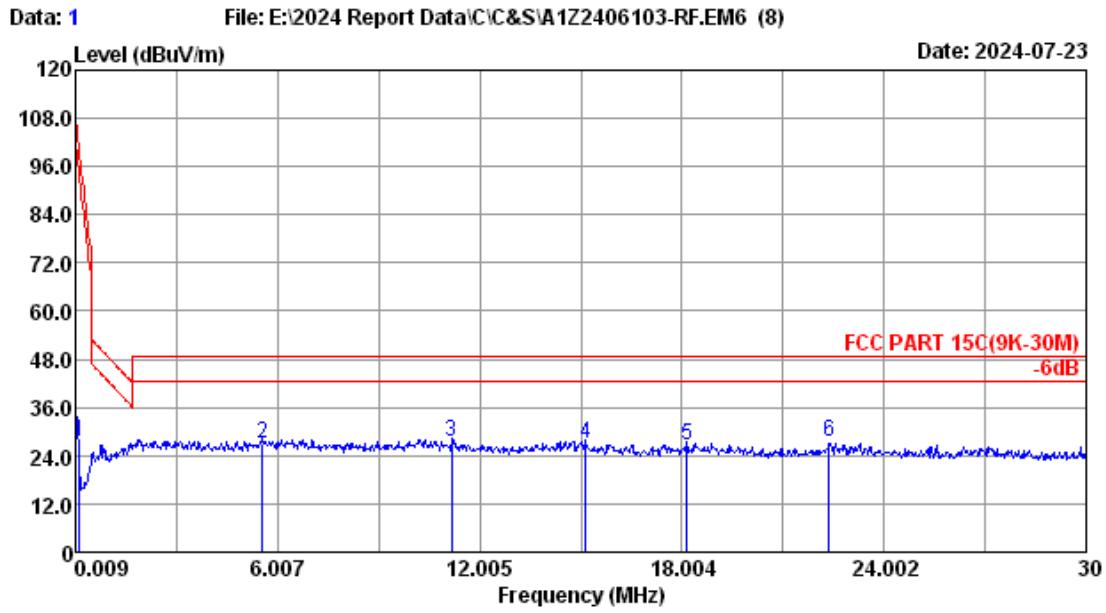
Data: 8 File: E:\2024 Report Data\C\CS\A122406103-RF.EM6 (8) Date: 2024-07-17



Site no. : 3m Chamber Data no. : 8
 Dis. / Ant. : 3m 2023 VULB 9168-429 Ant. pol. : VERTICAL
 Limit : FCC PART 15 C (3M)
 Env. / Ins. : 23.7°C/53% Engineer : Abel
 EUT :
 Power rating :
 Test Mode : TX Mode

No.	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	50.370	19.70	0.65	-2.73	17.62	40.00	22.38	QP
2	145.430	19.30	1.00	-3.92	16.38	43.50	27.12	QP
3	274.440	18.78	1.37	-2.95	17.20	46.00	28.80	QP
4	325.850	20.20	1.47	0.53	22.20	46.00	23.80	QP
5	355.920	20.46	1.54	1.21	23.21	46.00	22.79	QP
6	466.500	23.10	1.76	-2.44	22.42	46.00	23.58	QP

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
 2. The emission levels that are 20dB below the official limit are not reported.



Site no. : 10m Chamber Data no. : 1
 Dis. / Ant. : 10m 2024-LOOP ANT 10 Ant. pol. : VERTICAL
 Limit : FCC PART 15C(9K-30M)
 Env. / Ins. : 23.1°C/57% Engineer : Hongjie
 EUT :
 Power rating : AC 230V/50Hz
 Test Mode : TX Mode

No.	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	0.125	20.09	0.04	46.89	27.42	99.23	71.81	QP
2	5.557	19.90	0.31	46.68	27.19	48.63	21.44	QP
3	11.166	19.92	0.53	46.67	27.34	48.63	21.29	QP
4	15.154	20.00	0.58	46.09	26.95	48.63	21.68	QP
5	18.154	20.06	0.62	45.44	26.44	48.63	22.19	QP
6	22.382	20.15	0.67	46.17	27.38	48.63	21.25	QP

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading

5. 20 DB BANDWIDTH TEST

5.1. Test Equipments

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	PXA Signal Analyzer	Agilent	N9030A	MY51380221	Mar.16,24	1Year
2.	RF Cable	esatsheep	RM086-SMA/N-J J-1000	NO.1	Jun.19,24	1 Year

5.2. Limit

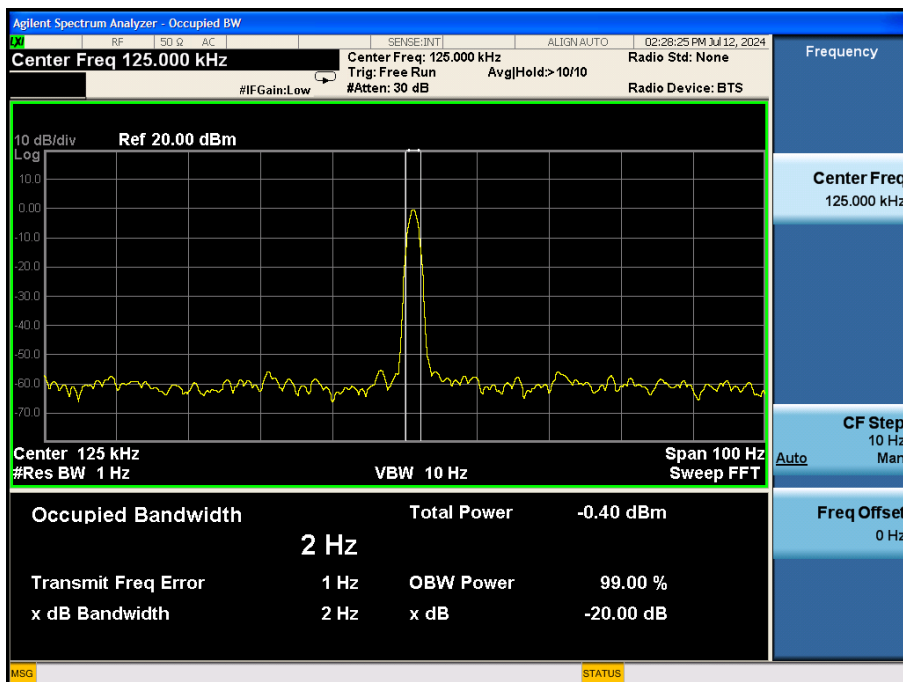
Intentional radiators operating under the alternative provisions to the general emission limits, as contained in §§ 15.217 through 15.257 and in Subpart E of this part, must be designed to ensure that the 20 dB bandwidth of the emission, or whatever bandwidth may otherwise be specified in the specific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

5.3. Test Results

EUT: TrapMan		
M/N: TM8		
Test date: 2024-07-12	Pressure: 102.1±1.0 kpa	Humidity: 53.2±3.0%
Tested by: lili	Test site: RF site	Temperature: 22.3±0.6°C

Frequency (kHz)	20bandwidth (Hz)	Limit (kHz)
125	0.002	N/A

Conclusion:Pass



6. DEVIATION TO TEST SPECIFICATIONS

[NONE]