

RF TEST REPORT

Applicant Sonitus Medical (Shanghai) Co., Ltd.
FCC ID 2AUH802
Product SoundBite Hearing System
Brand SoundBite Hearing System
Model G4
Report No. R2310A1148-R1V1
Issue Date January 17, 2024

TA Technology (Shanghai) Co., Ltd. tested the above equipment in accordance with the requirements in **FCC CFR47 Part 15C (2023)**. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

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Version	Revision Description	Issue Date
Rev.0	Initial issue of report.	January 5, 2024
Rev.1	Update information.	January 17, 2024
Note: This revised report (Report No.: R2310A1148-R1V1) supersedes and replaces the previously issued report (Report No.: R2310A1148-R1). Please discard or destroy the previously issued report and dispose of it accordingly.		

Summary of Measurement Results

Number	Test Case	Clause in FCC rules	Verdict
1	20 dB bandwidth	15.215(c)	PASS
2	Radiated Emissions	15.209, 15.205;	PASS
3	AC Power Line Conducted Emissions	15.207	NA
Date of Testing: December 11, 2023 ~ December 19, 2023			
Date of Sample Received: November 9, 2023			
Note: NA = Not Applicable.			
All indications of Pass/Fail in this report are opinions expressed by TA Technology (Shanghai) Co., Ltd. based on interpretations and/or observations of test results. Measurement Uncertainties were not taken into account and are published for informational purposes only.			

1 Test Laboratory

1.1 Notes of the Test Report

This report shall not be reproduced in full or partial, without the written approval of **TA Technology (Shanghai) Co., Ltd.** The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. Measurement Uncertainties were not taken into account and are published for informational purposes only. This report is written to support regulatory compliance of the applicable standards stated above.

1.2 Test facility

FCC (Designation number: CN1179, Test Firm Registration Number: 446626)

TA Technology (Shanghai) Co., Ltd. has been listed on the US Federal Communications Commission list of test facilities recognized to perform measurements.

A2LA (Certificate Number: 3857.01)

TA Technology (Shanghai) Co., Ltd. has been listed by American Association for Laboratory Accreditation to perform measurement.

1.3 Testing Location

Company: TA Technology (Shanghai) Co., Ltd.
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City: Shanghai
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E-mail: Kain.Xu@cpt.eurofinscn.com

2 General Description of Equipment under Test

2.1 Applicant and Manufacturer Information

Applicant	Sonitus Medical (Shanghai) Co., Ltd.
Applicant address	Floor 5, Bldg. 11, 500 Furonghua Rd, Pudong, Shanghai, 201318, China
Manufacturer	Sonitus Medical (Shanghai) Co., Ltd.
Manufacturer address	Floor 5, Bldg. 11, 500 Furonghua Rd, Pudong, Shanghai, 201318, China

2.2 General information

EUT Description	
Model	G4
Lab Internal SN	R2310A1148/S01
HW Version	V1
SW Version	V1
Power Supply	AC adapter
Antenna Type	Internal Antenna
Antenna Connector	A permanently attached antenna (meet with the standard FCC Part 15.203 requirement)
Frequency	10.597 MHz
EUT Accessory	
Adapter	Manufacturer: Shenzhen Longxc Power Supply Co.LTD. Model:LXCP6-050100D
USB Cable	Manufacturer: DongGuan WIN WIN Precision Electronics Co.,Ltd. Model: USB-Type-C Connection line
Note: 1. The EUT is sent from the applicant to TA and the information of the EUT is declared by the applicant.	

3 Applied Standards

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

Test standards:

FCC CFR47 Part 15C (2023) Radio Frequency Devices

ANSI C63.10 (2013)

4 Test Configuration

Test Mode

The EUT has been associated with peripherals and configuration operated in a manner tended to maximize its emission characteristics in a typical application.

The radiated emission was measured in the following position: EUT stand-up position (Z axis), lie-down position (X, Y axis). The worst emission was found in lie-down position (X axis) and the worst case was recorded.

5 Test Case Results

5.1 20 dB Bandwidth

Ambient condition

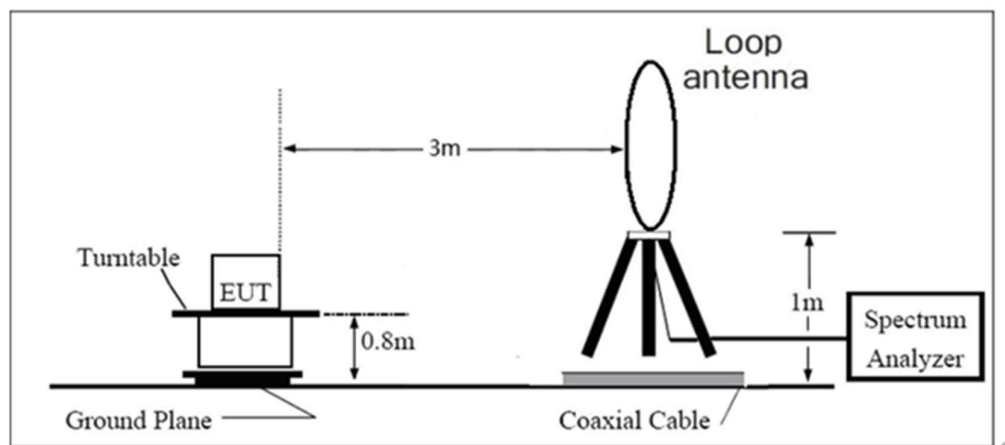
Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.5kPa

Method of Measurement

Tests are performed in accordance with ANSI C63.10-2013.

The 20 dB and 99% bandwidth of the fundamental frequency remain inside the band of operation of 10.597 MHz. The EUT was placed on a turn table which is 0.8m above ground plane. the EUT's 20dB Bandwidth power was received by the test antenna which was connected to the spectrum analyzer. The occupied bandwidth is measured using spectrum analyzer. The resolution bandwidth (RBW) shall be in the range of 1% to 5% of the actual occupied / x dB bandwidth and the video bandwidth (VBW) shall not be smaller than three times the RBW value.

Test Setup



Limits

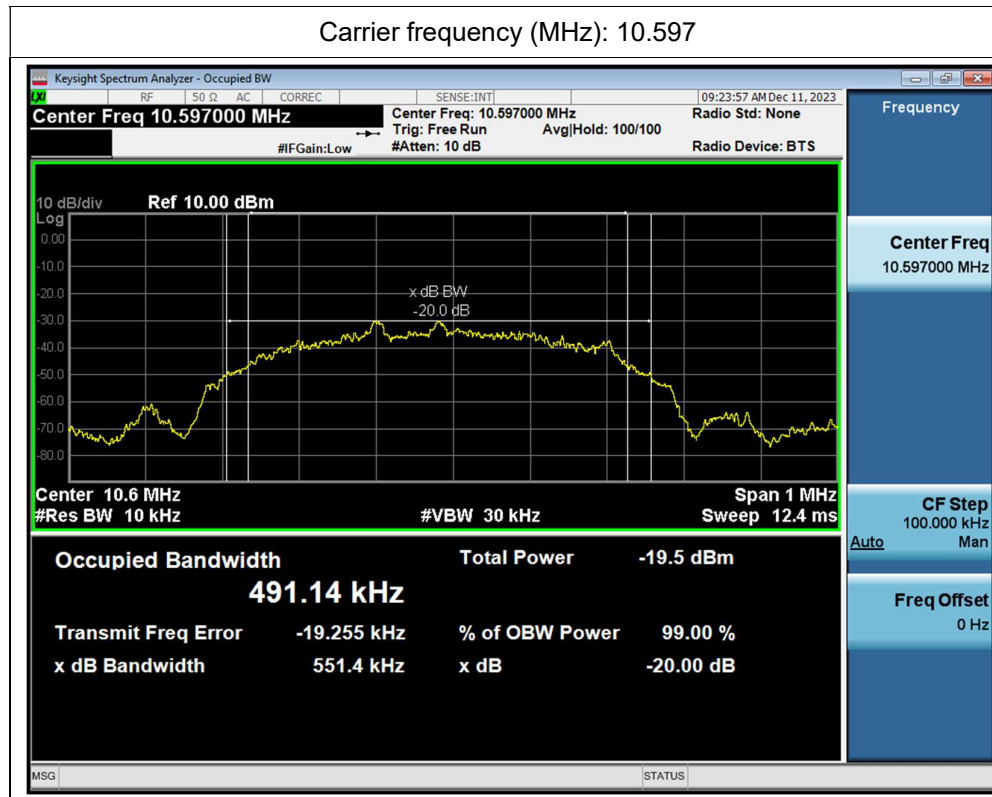
No specific occupied bandwidth requirements in part 15.215(c).

Measurement Uncertainty

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor $k = 2$. $U = 1.19$ dB

Test Results

Carrier frequency (MHz)	99% bandwidth (kHz)	20 dB bandwidth (kHz)	Conclusion
10.597MHz	491.140	551.400	PASS



5.2 Radiated Emissions

Ambient condition

Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.5kPa

Method of Measurement

The test set-up was made in accordance to the general provisions of ANSI C63.10-2013. The Equipment Under Test (EUT) was set up on a non-conductive table in the semi-anechoic chamber. The test was performed at the distance of 3 m between the EUT and the receiving antenna. The radiated emissions measurements were made in a typical installation configuration.

Sweep the whole frequency band through the range from 9 kHz to the 10th harmonic of the carrier, and the emissions less than 20 dB below the permissible value are reported.

During the test, below 30MHz, the center of the loop shall be 1 meters; above 30MHz, the height of receive antenna shall be moved from 1 to 4 meters, and the antenna shall be performed under horizontal and vertical polarization. The turntable shall be rotated from 0 to 360 degrees for detecting the maximum of radiated spurious signal level. The measurements shall be repeated with orthogonal polarization of the test antenna. The data of cable loss and antenna factor has been calibrated in full testing frequency range before the testing.

Set the spectrum analyzer in the following:

Below 1GHz (detector: Peak and Quasi-Peak)

RBW=100kHz / VBW=300kHz / Sweep=AUTO

Above 1GHz(detector: Peak):

(a) PEAK: RBW=1MHz VBW=3MHz/ Sweep=AUTO

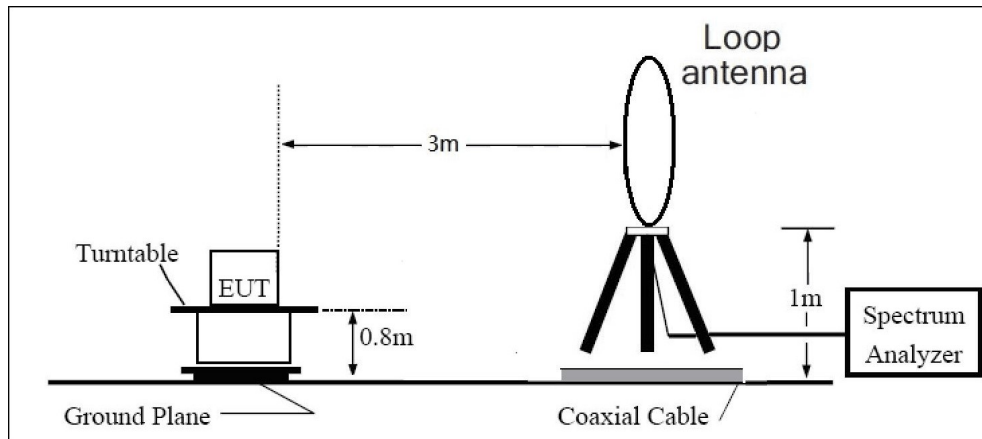
(b) AVERAGE: RBW=1MHz / VBW=3MHz / Sweep=AUTO

The radiated emission was measured in the following position: EUT lie-down position (X axis). The emission was recorded. Then this mode was measured in the following mode: EUT with cradle and EUT without cradle. The worst emission was found in EUT with cradle mode and the worst case was recorded.

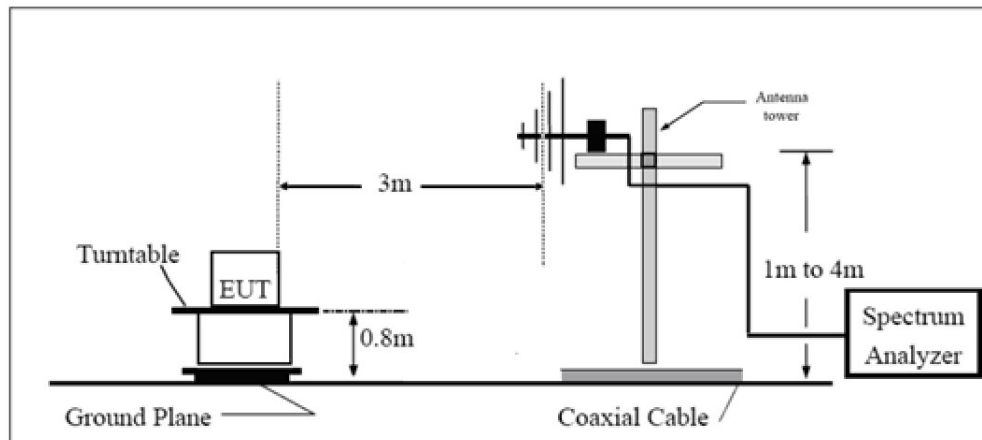
The test is in transmitting mode.

Test setup

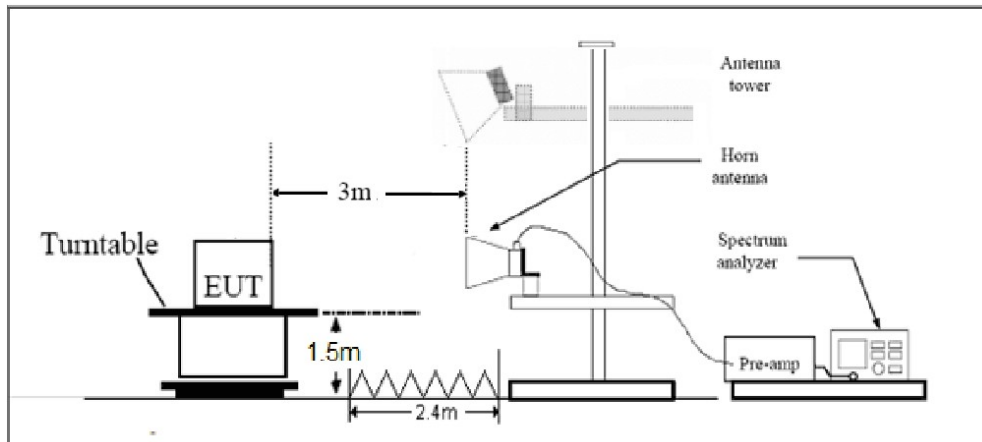
9kHz~~~ 30MHz



30MHz~~~ 1GHz



Above 1GHz



Limits

Unwanted spurious emissions fallen in restricted bands per FCC Part15.205 shall comply with the general field strength limits set forth in § 15.209 as below table.

Limit in radiated emission measurement (Part 15.209)

Frequency of emission (MHz)	Field strength($\mu\text{V/m}$)	Field strength(dB $\mu\text{V/m}$)
0.009–0.490	2400/F(kHz)	/
0.490–1.705	24000/F(kHz)	/
1.705–30.0	30	/
30-88	100	40
88-216	150	43.5
216-960	200	46
Above960-1000	500	54

§15.35(b)

There is also a limit on the radio frequency emissions, as measured using instrumentation with a peak detector function, corresponding to 20 dB above the maximum permitted average limit.

Peak Limit=74 dB $\mu\text{V/m}$

Average Limit=54 dB $\mu\text{V/m}$

Spurious Radiated Emissions are permitted in any of the frequency bands listed below:

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)
13.36-13.41			

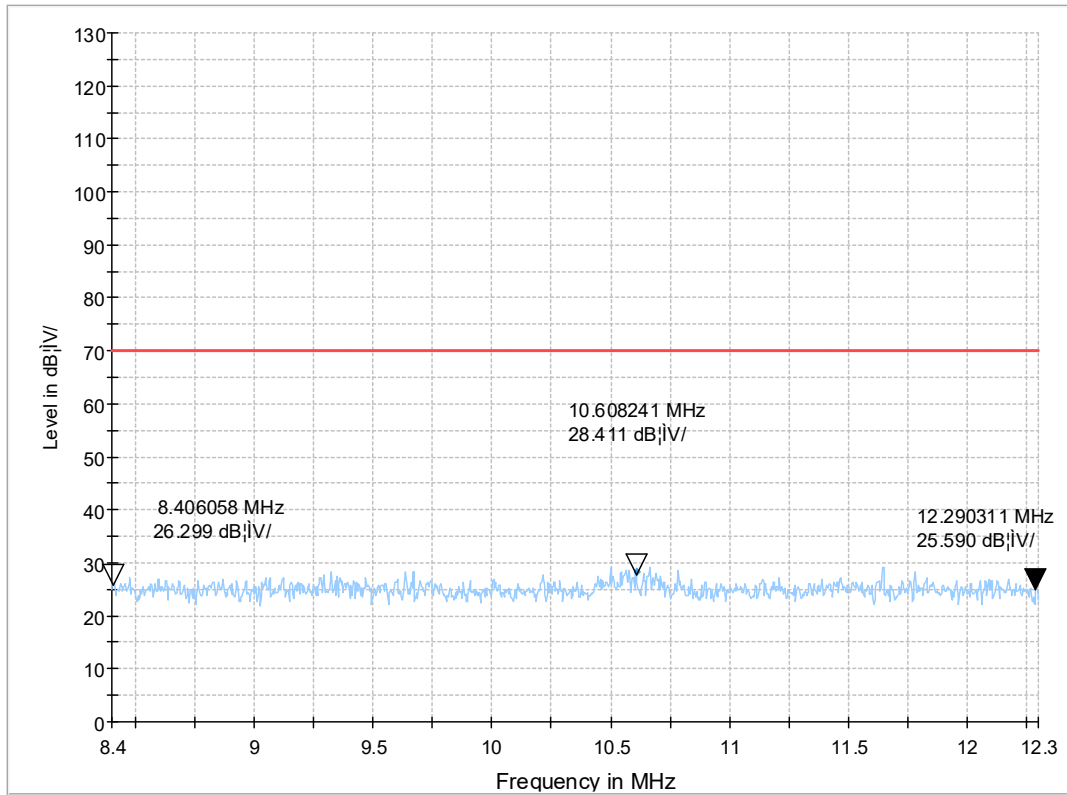
Measurement Uncertainty

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor $k = 1.96$.

Frequency	Uncertainty
9KHz-30MHz	3.55 dB
30MHz-200MHz	4.02 dB
200MHz-1GHz	3.28 dB
Above 1GHz	3.70 dB

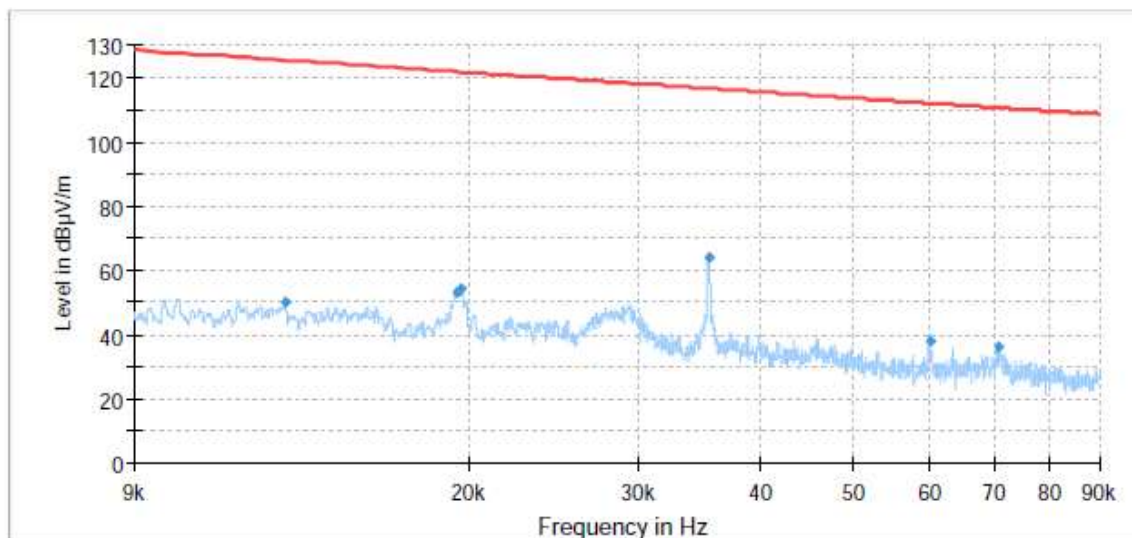
Test Results:**Band Edge Emission**

A symbol ($\text{dB}\mu\text{V}/$) in the test plot below means (dB $\mu\text{V}/\text{m}$)



Radiates Emission from 8.4 MHz to 12.3 MHz

Radiated Emission



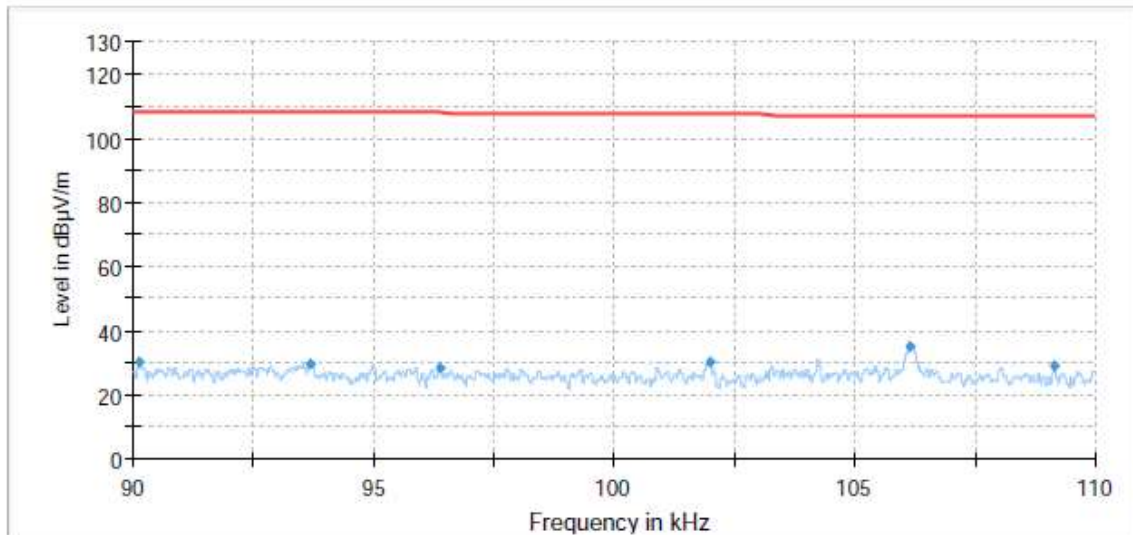
Note: The signal beyond the limit is carrier.

Radiated Emission from 9kHz to 90kHz

Frequency (MHz)	Average (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Bandwidth (kHz)	Azimuth (deg)	Corr. (dB/m)
0.01	49.92	125.41	75.49	0.200	0.00	18
0.02	53.26	121.85	68.59	0.200	328.00	17
0.02	54.42	121.77	67.34	0.200	86.00	17
0.04	64.38	116.63	52.25	0.200	0.00	17
0.06	37.87	112.05	74.18	0.200	0.00	17
0.07	36.07	110.61	74.53	0.200	86.00	17

Remark: 1. Correction Factor = Antenna factor+ Insertion loss(cable loss+amplifier gain)

2. Margin = Limit –Average



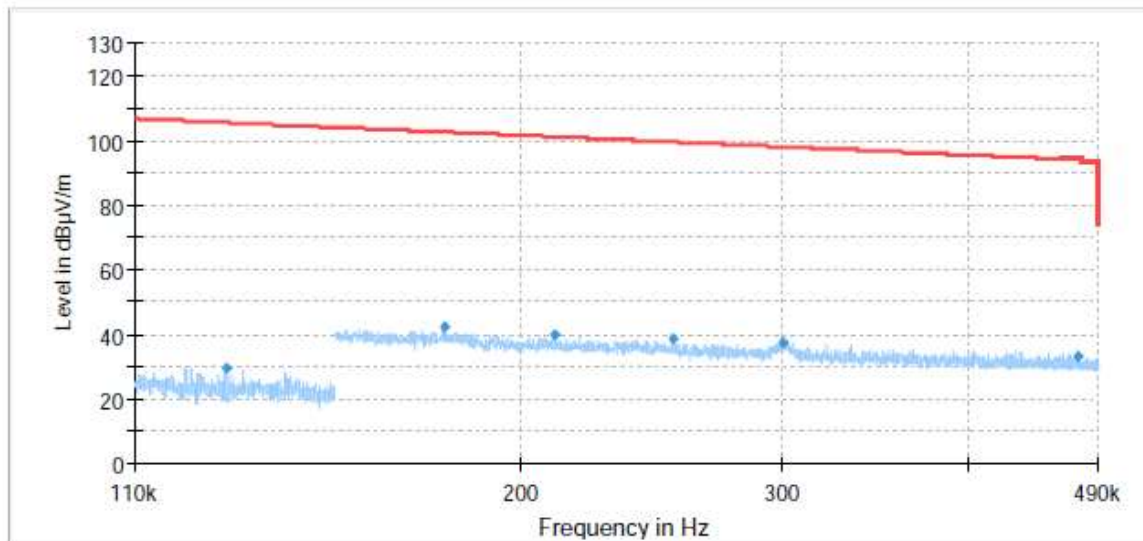
Note: The signal beyond the limit is carrier.

Radiated Emission from 90kHz to 110kHz

Frequency (MHz)	Quasi-Peak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Bandwidth (kHz)	Azimuth (deg)	Corr. (dB/m)
0.09	30.04	108.51	78.46	0.200	0.00	17
0.09	29.50	108.17	78.68	0.200	4.00	17
0.10	28.32	107.93	79.61	0.200	241.00	17
0.10	30.45	107.43	76.98	0.200	49.00	17
0.11	35.15	107.09	71.94	0.200	10.00	17
0.11	28.85	106.84	77.99	0.200	352.00	17

Remark: 1. Correction Factor = Antenna factor+ Insertion loss(cable loss+amplifier gain)

2. Margin = Limit – Quasi-Peak



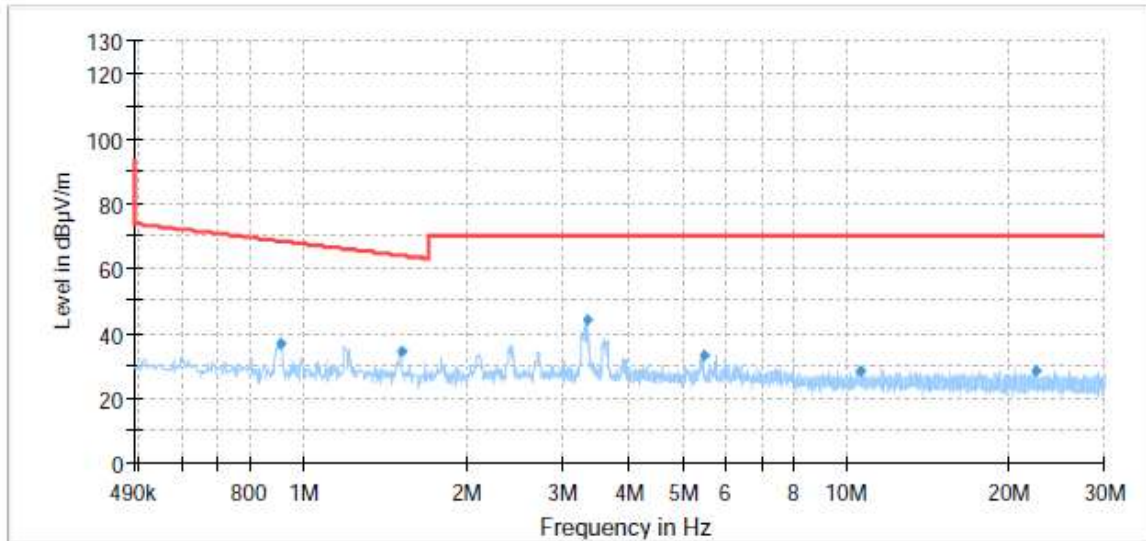
Note: The signal beyond the limit is carrier.

Radiated Emission from 110kHz to 490kHz

Frequency (MHz)	Average (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Bandwidth (kHz)	Azimuth (deg)	Corr. (dB/m)
0.13	29.83	105.55	75.73	0.200	166.00	17
0.18	42.02	102.62	60.60	9.000	339.00	17
0.21	39.89	101.13	61.25	9.000	202.00	17
0.25	38.68	99.54	60.87	9.000	329.00	17
0.30	37.59	98.06	60.47	9.000	214.00	17
0.48	32.99	94.07	61.08	9.000	335.00	17

Remark: 1. Correction Factor = Antenna factor+ Insertion loss(cable loss+amplifier gain)

2. Margin = Limit –Average



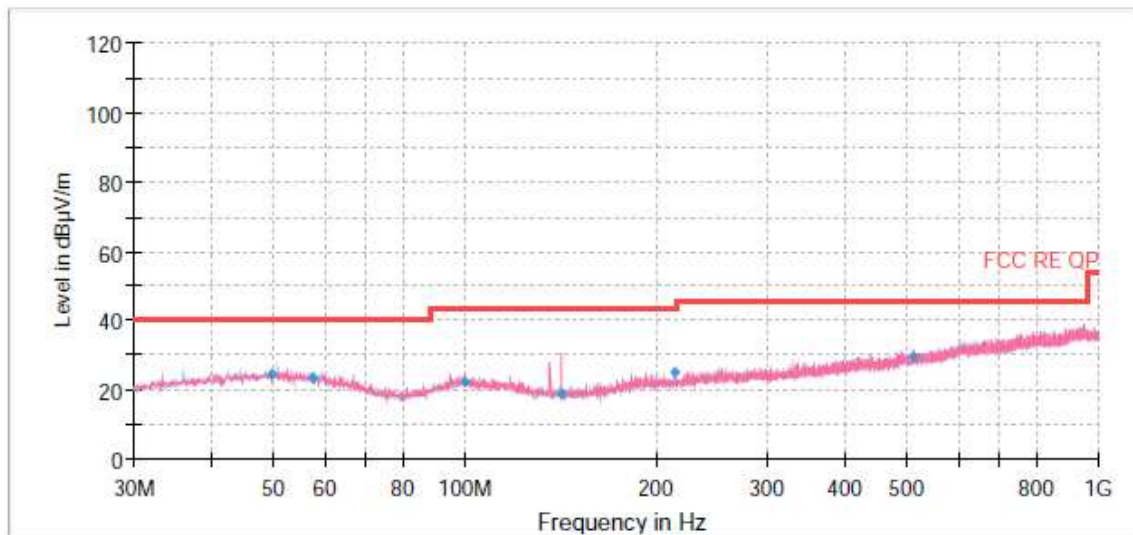
Note: The signal beyond the limit is carrier.

Radiated Emission from 490kHz to 30MHz

Frequency (MHz)	Quasi-Peak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Bandwidth (kHz)	Azimuth (deg)	Corr. (dB/m)
0.91	37.11	68.38	31.27	9.000	72.00	17
1.52	34.26	63.98	29.72	9.000	318.00	17
3.34	43.84	70.00	26.16	9.000	357.00	17
5.50	33.19	70.00	36.81	9.000	318.00	17
10.61	28.41	70.00	41.59	9.000	10.00	17
22.48	28.35	70.00	41.65	9.000	48.00	17

Remark: 1. Correction Factor = Antenna factor+ Insertion loss(cable loss+amplifier gain)

2. Margin = Limit – Quasi-Peak



Note: The signal beyond the limit is carrier.

Radiated Emission from 30MHz to 1GHz

Frequency (MHz)	Quasi-Peak (dBμV/m)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)	Margin (dB)	Limit (dBμV/m)
49.37	24.66	100.0	H	4.00	20	15.34	40.00
57.45	23.61	114.0	H	153.00	20	16.39	40.00
100.12	22.39	123.0	V	118.00	19	21.11	43.50
141.88	18.98	116.0	V	275.00	15	24.52	43.50
214.50	25.34	120.0	V	269.00	18	18.16	43.50
509.91	29.73	114.0	V	98.00	26	16.27	46.00

Remark: 1. Correction Factor = Antenna factor+ Insertion loss(cable loss+amplifier gain)

2. Margin = Limit – Quasi-Peak

5.3 AC Power Line Conducted Emissions

Ambient condition

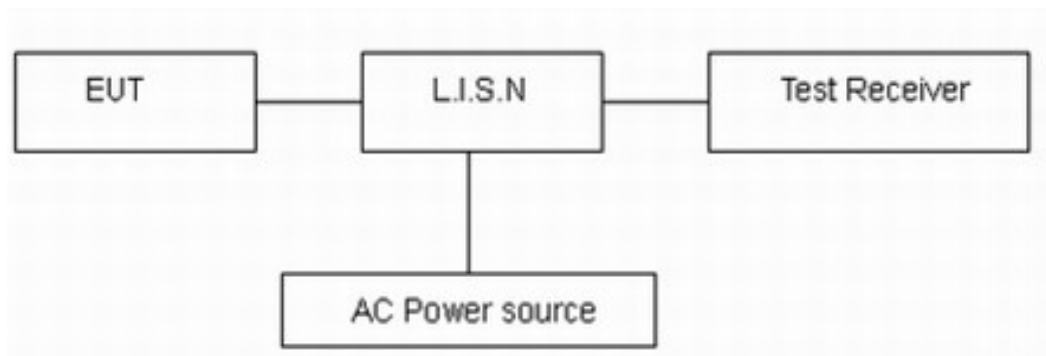
Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.5kPa

Method of Measurement

The EUT is placed on a non-metallic table of 80cm height above the horizontal metal reference ground plane. During the test, the EUT was operating in its typical mode. The test method is according to ANSI C63.10-2013. Connect the AC power line of the EUT to the L.I.S.N. Use EMI receiver to detect the average and Quasi-peak value. RBW is set to 9 kHz, VBW is set to 30kHz. The measurement result should include both L line and N line.

The test is in transmitting mode.

Test Setup



Note: AC Power source is used to change the voltage from 220V/50Hz to 110V/60Hz.

Limits

Frequency (MHz)	Conducted Limits(dBμV)	
	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.		

Measurement Uncertainty

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor $k = 2$. $U = 1.19$ dB

Test Results:

The equipment doesn't connect to public network, therefore this requirement does not apply.

6 Main Test Instruments

Name of Equipment	Manufacturer	Type/Model	Serial Number	Calibration Date	Expiration Time
Spectrum Analyzer	KEYSIGHT	N9020A	MY51330870	2023-05-12	2024-05-11
EMI Test Receiver	R&S	ESCI3	100948	2023-05-12	2024-05-11
Loop Antenna	SCHWARZBECK	FMZB1519	1519-047	2023-04-16	2026-04-15
TRILOG Broadband Antenna	SCHWARZBECK	VULB 9163	01111	2022-10-25	2025-10-24
Software	R&S	EMC32	9.26.01	/	/

ANNEX A: The EUT Appearance

The EUT Appearance are submitted separately.

ANNEX B: Test Setup Photos

The Test Setup Photos are submitted separately.

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