



# RF TEST REPORT

**Applicant** Sonitus Medical (Shanghai) Co., Ltd.

**FCC ID** 2AUH801

**Product** SoundBite Hearing System

**Model** SoundBite G3, SoundBite G3S

**Report No.** R1902A0232-R1

**Issue Date** November 26, 2019

TA Technology (Shanghai) Co., Ltd. tested the above equipment in accordance with the requirements in **FCC CFR47 Part 15C (2018)**. 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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Approved by: Kai Xu

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## Summary of measurement results

Number	Test Case	Clause in FCC rules	Verdict
1	Radiated Emissions	15.209	PASS
2	Conducted Emissions	15.207	PASS
Date of Testing: June 12, 2019 ~ July 5, 2019			



## 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. This report must not be used by the client to claim product certification, approval, or endorsement by any government agencies.



## 1.2. Testing Location

Company: TA Technology (Shanghai) Co., Ltd.  
Address: No.145, Jintang Rd, Tangzhen Industry Park, Pudong  
City: Shanghai  
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## 2. General Description of Equipment under Test

### Client Information

Applicant	Sonitus Medical (Shanghai) Co., Ltd.
Applicant address	Bldg. 11-F5, 500 Furonghua Road, Pudong District, 201318 Shanghai, PEOPLE'S REPUBLIC OF CHINA
Manufacturer	Sonitus Medical (Shanghai) Co., Ltd.
Manufacturer address	Bldg. 11-F5, 500 Furonghua Road, Pudong District, 201318 Shanghai, PEOPLE'S REPUBLIC OF CHINA

### General information

EUT Description		
Model:	SoundBite G3, SoundBite G3S	
SN:	/	
Hardware Version:	1.0	
Software Version:	1.0	
Power Supply:	AC adapter/Battery	
Antenna Type:	Internal Antenna	
Antenna Connector	A permanently attached antenna (meet with the standard FCC Part 15.203 requirement)	
Frequency Band:	TX: 10.6MHz	RX: 10.6MHz
Operating temperature range:	10° C ~ +40° C	
Operating voltage range:	3.33V ~ 4.07V	
State DC voltage:	3.7 V	
EUT Accessory		
Adapter 1	Manufacturer: Dongguan Shilong Fuhua Electronic Co., Ltd. Model: UE06WOCPU-050100SPA	
Adapter 2	Manufacturer: Dongguan Shilong Fuhua Electronic Co., Ltd. Model: UES06WOCPU-050100SPA	
Battery	Manufacturer: Tianjin Lishen Battery Jont-Stock Co., Ltd Model: PP031313AB, TLp000A4	
USB Cable	Manufacturer: Dongguan Mepos Electronics	
Note: 1. The information of the EUT is declared by the manufacturer. 2. There are more than one Adapter, each one should be applied throughout the compliance test respectively, however, only the worst case (Adapter1) will be recorded in this report.		



### 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 2 (2018)**
- **FCC CFR47 Part 15C (2018)**
- **ANSI C63.10 (2013)**



## 4. Test Configuration

### Test Mode

The EUT was programmed to be in continuously transmitting mode and the transmit duty cycle is not less than 98%.

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

## 5. Test Case Results

### 5.1. Radiates Emission

#### Ambient condition

Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	102.5kPa

#### 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:

#### Out-of-band

Below 30MHz

RBW=9KHz, VBW=30KHz, detector=peak;

Above 30MHz,

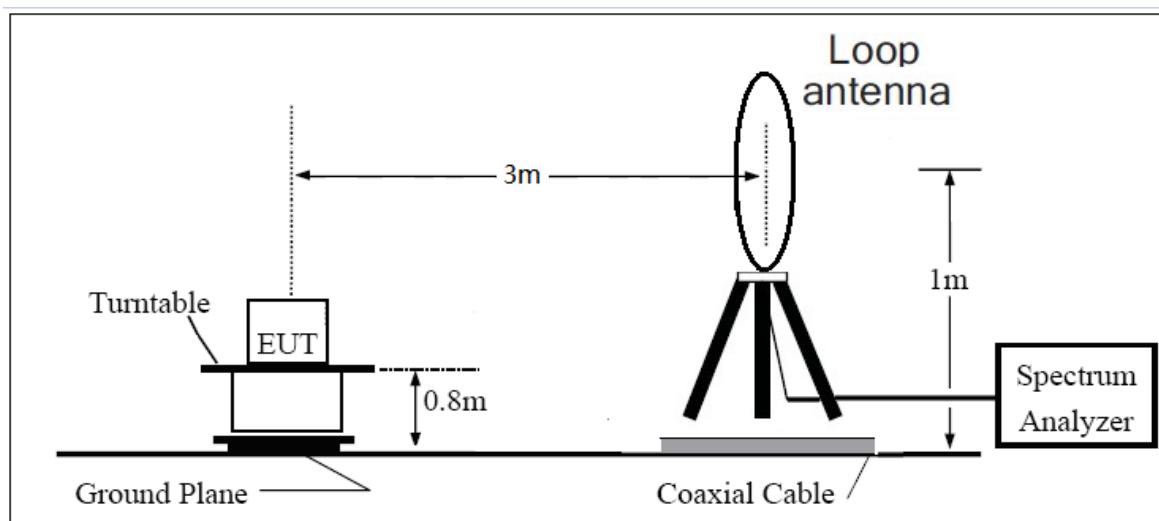
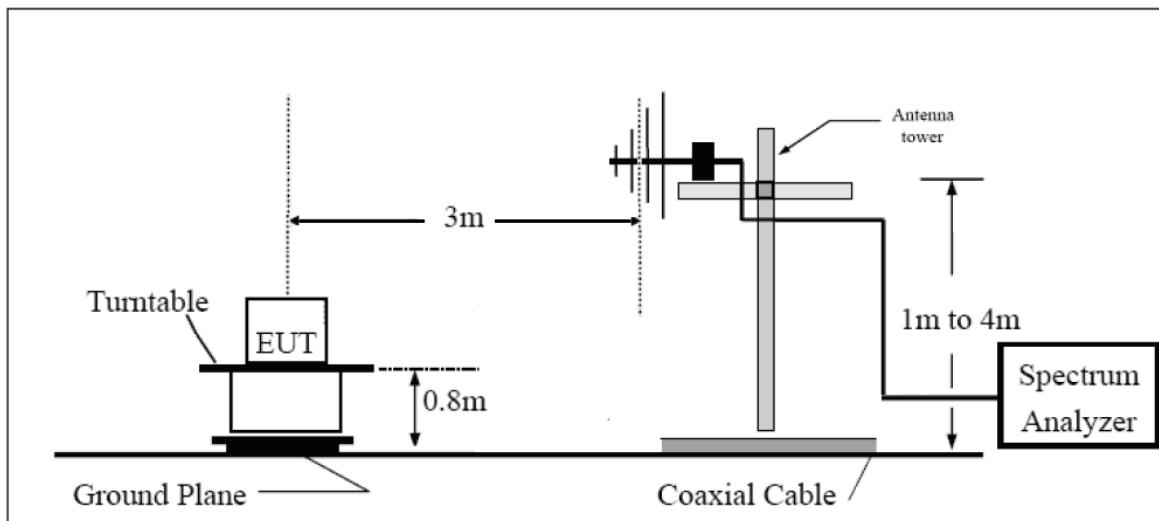
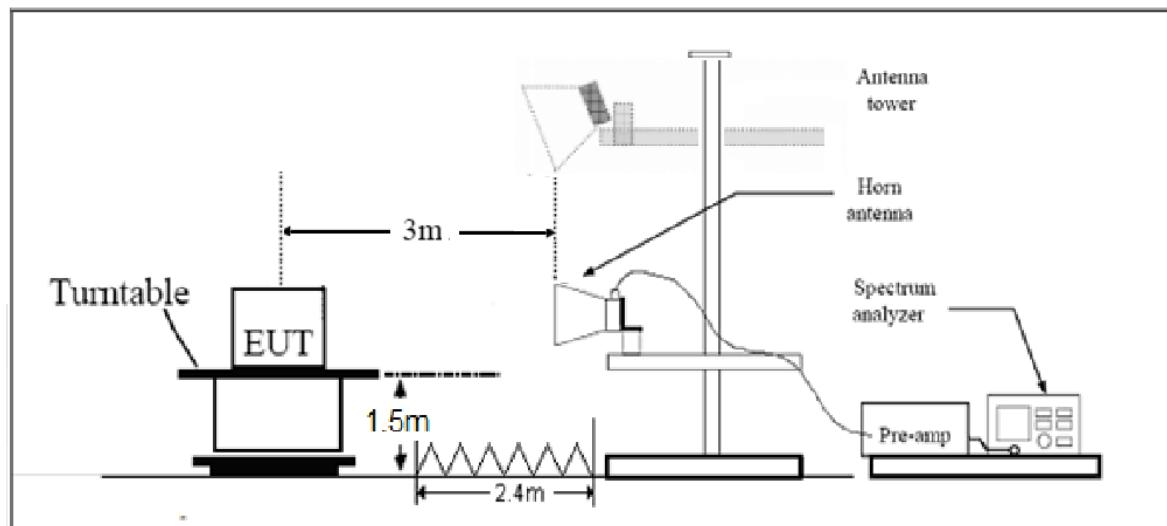
RBW=100KHz, VBW=300KHz, Detector=peak

#### In-band

RBW=9KHz, VBW=30KHz, detector=peak;

The field strength of spurious 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 loop antenna is vertical, the other antennas are vertical and horizontal.

The test is in transmitting mode 10.6MHz in report.

**Test setup****9kHz~~~ 30MHz****30MHz~~~ 1GHz****Above 1GHz**

Note: Area side:2.4mX3.6m

**Limits**

§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 of emission (MHz)	Field strength(uV/m)	Field strength(dBuV/m)
0.009–0.490	2400/F(kHz)	128.519dBuV/m -93.8dBuV/m
0.490–1.705	24000/F(kHz)	73.8dBuV/m -62.969dBuV/m
1.705–30.0	30	69.5 dBuV/m
30-88	100	40 dBuV/m
88-216	150	43.5 dBuV/m
216-960	200	46 dBuV/m
Above960	500	54 dBuV/m

When using other measurement distance, according to the standard C63.10, If that point is closer to the EUT than  $\lambda/2\pi$  and the limit distance is greater than  $\lambda/2\pi$ , the data was extrapolated to the specified measurement distance of 30m using extrapolation factor as specified in §6.4.4.2. Extrapolation Factor =  $40\log(d \text{ near filed}/ d \text{ measure }) + 20\log(d \text{ limit} / d \text{ near filed})$

\*\*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.

§15.209 (b) In the emission table above, the tighter limit applies at the band edges.

§15.209 (d) The emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9-90 kHz, 110-490 kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector.

**Measurement Uncertainty**

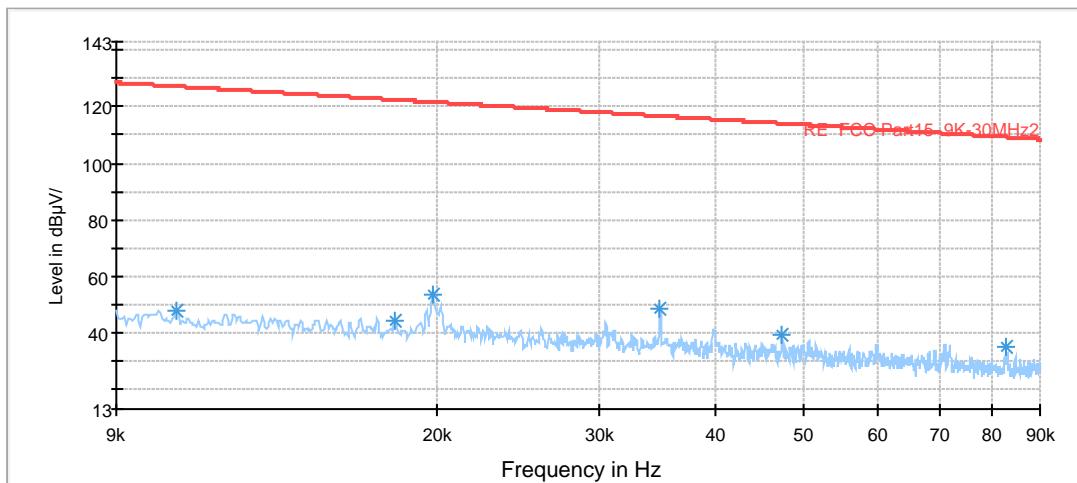
The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor  $k = 1.96$ .

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

**Test result****Out-of-band**

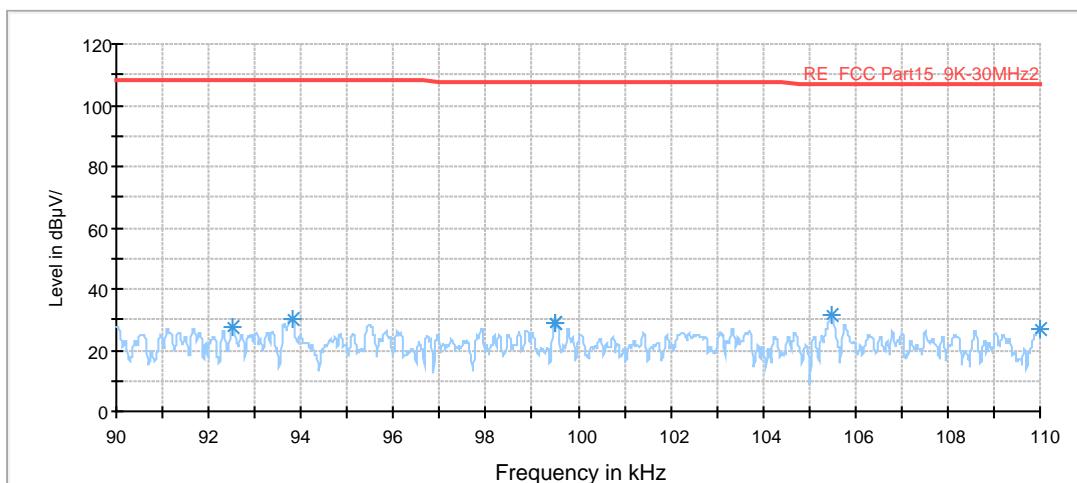
The following graphs display the maximum values of horizontal and vertical by software.  
For above 1GHz, Blue trace uses the peak detection, Green trace uses the average detection.

FCC RE 9K-90KHz AV



Radiates Emission from 9kHz to 90kHz

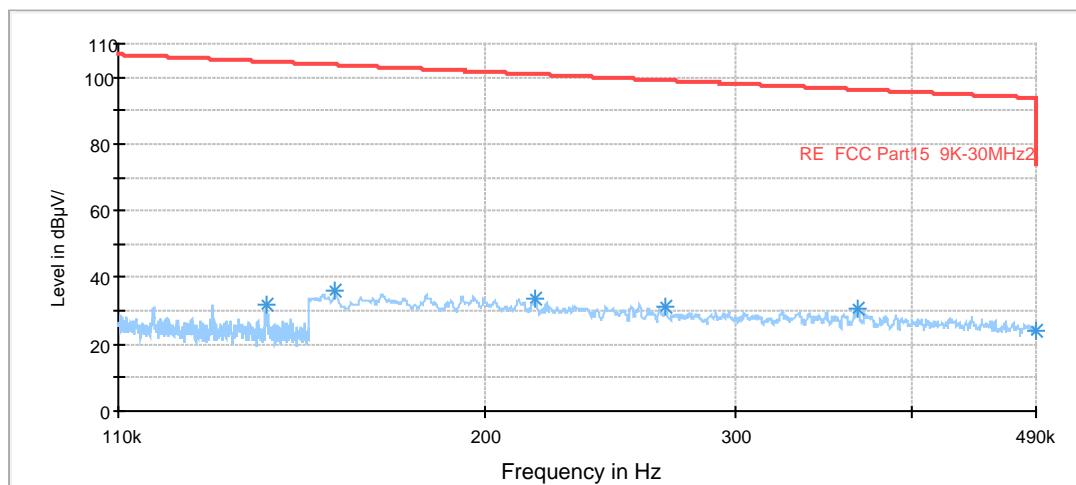
FCC RE 90K-110KHz QP



Radiates Emission from 90kHz to 110kHz



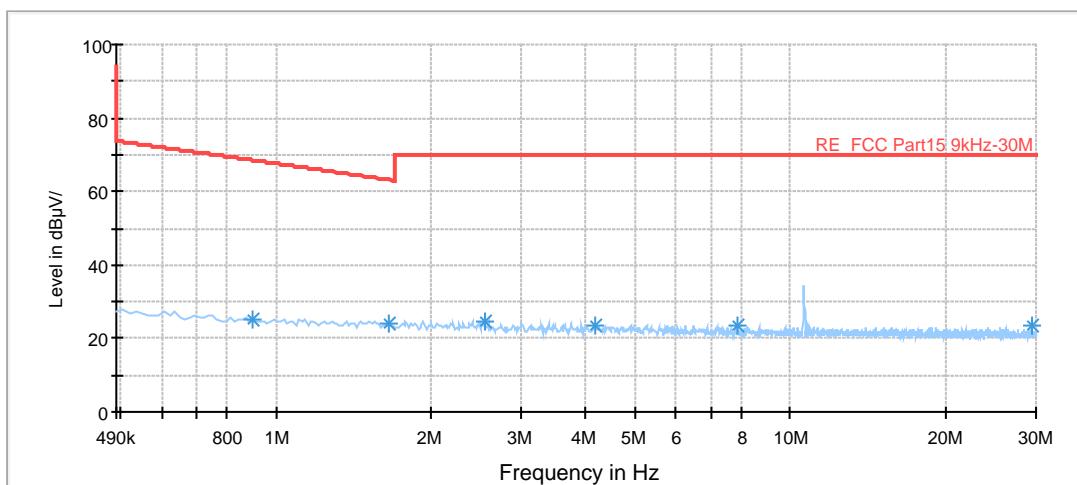
## FCC RE 110K-490KHz AV



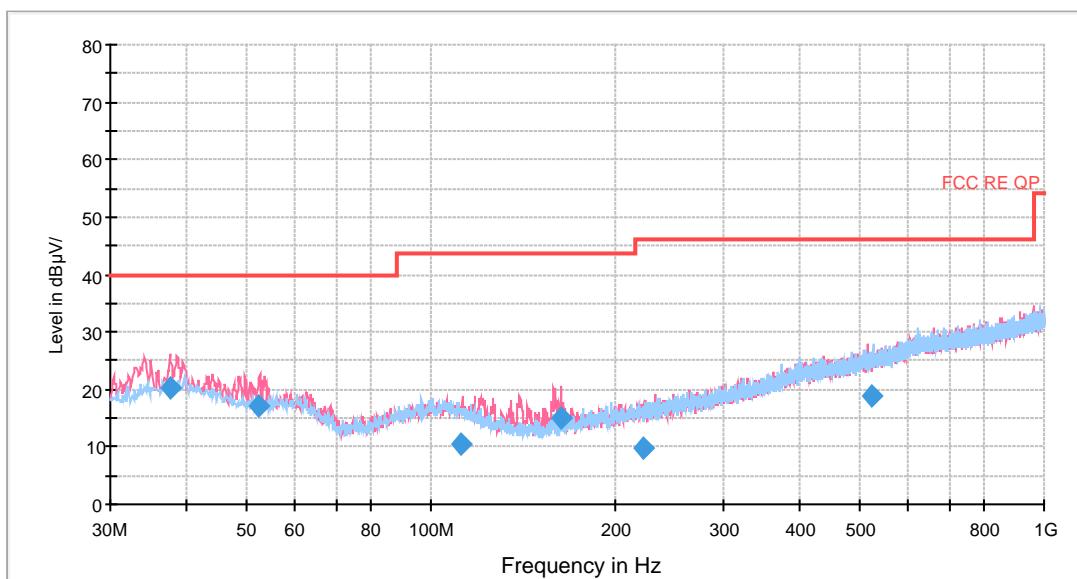
Radiates Emission from 110kHz to 490kHz



## FCC RE 490K-30MHz QP



Radiates Emission from 490kHz to 30MHz



Radiates Emission from 30MHz to 1GHz

Note: This graph displays the maximum values of horizontal and vertical by software

Frequency (MHz)	Quasi-Peak (dB <sub>µV/m</sub> )	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)	Margin (dB)	Limit (dB <sub>µV/m</sub> )
37.637500	20.2	100.0	V	65.0	16.7	19.8	40.0
52.472500	17.1	100.0	V	13.0	13.7	22.9	40.0
111.890000	10.5	225.0	V	339.0	13.1	33.0	43.5
163.215000	15.0	100.0	V	11.0	10.2	28.5	43.5
222.671250	9.9	100.0	V	310.0	12.9	36.1	46.0
524.948750	18.8	114.0	H	11.0	21.6	27.2	46.0

## 5.2. Conducted Emission

### Ambient condition

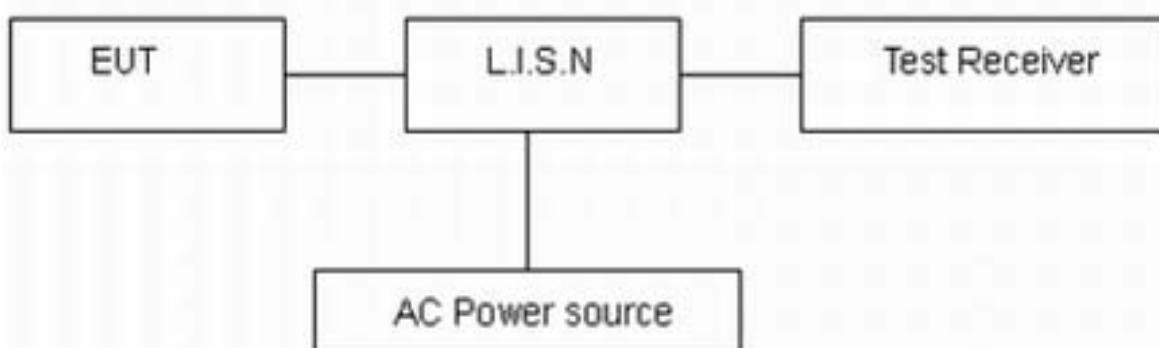
Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.5kPa

### Methods 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 110V/60Hz.

### Limits

§15.207 (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  $\mu$ H/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.

Frequency (MHz)	Conducted Limits(dB $\mu$ V)	
	Quasi-peak	Average
0.15 - 0.5	66 to 56 *	56 to 46 *
0.5 - 5	56	46



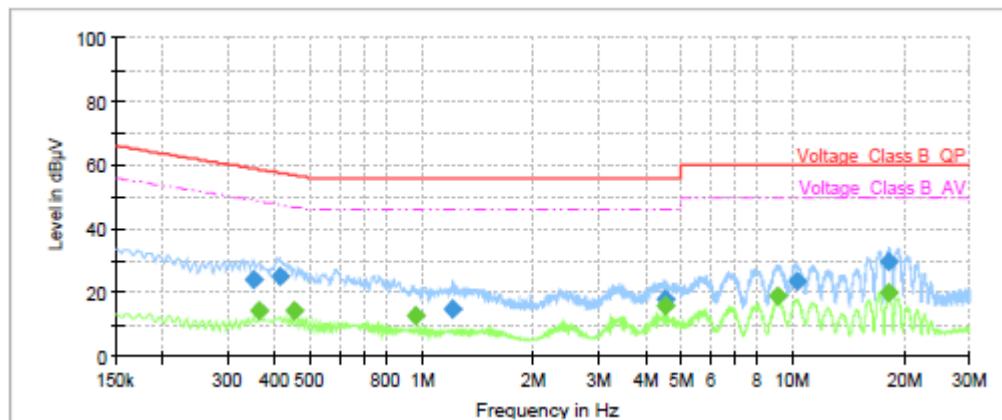
5 - 30	60	50
*: Decreases with the logarithm of the frequency.		

### Measurement Uncertainty

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor  $k = 1.96$ ,  $U = 2.69$  dB.

**Test Results:**

Following plots, Blue trace uses the peak detection and Green trace uses the average detection.

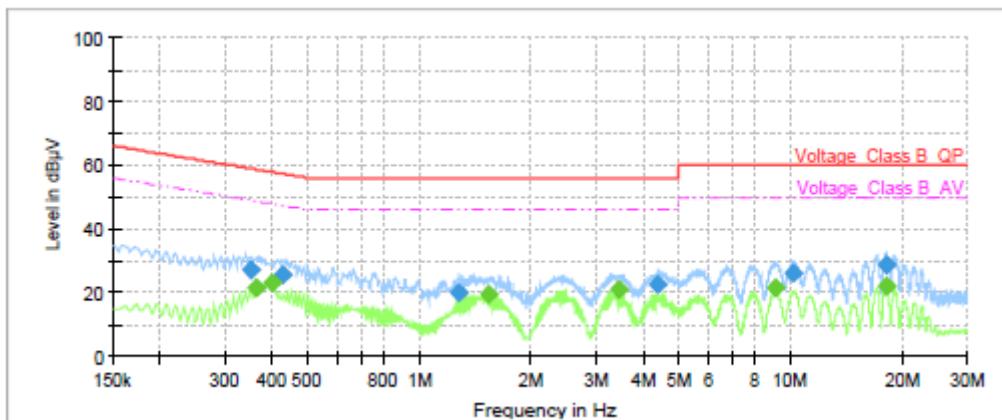


Frequency (MHz)	QuasiPeak (dB $\mu$ V)	Average (dB $\mu$ V)	Limit (dB $\mu$ V)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Filter	Corr. (dB)
0.35	24.27	---	58.90	34.63	1000.0	9.000	L1	ON	19.18
0.36	---	14.55	48.69	34.14	1000.0	9.000	L1	ON	19.19
0.41	25.10	---	57.58	32.48	1000.0	9.000	L1	ON	19.23
0.45	---	14.47	46.85	32.38	1000.0	9.000	L1	ON	19.23
0.96	---	12.80	46.00	33.20	1000.0	9.000	L1	ON	19.24
1.21	15.00	---	56.00	41.00	1000.0	9.000	L1	ON	19.23
4.53	18.07	---	56.00	37.93	1000.0	9.000	L1	ON	19.10
4.53	---	15.94	46.00	30.06	1000.0	9.000	L1	ON	19.10
9.11	---	18.74	50.00	31.26	1000.0	9.000	L1	ON	19.29
10.32	23.79	---	60.00	36.21	1000.0	9.000	L1	ON	19.40
18.18	---	20.24	50.00	29.76	1000.0	9.000	L1	ON	19.53
18.22	29.80	---	60.00	30.20	1000.0	9.000	L1	ON	19.53

Remark: Correct factor=cable loss + LISN factor

L line

Conducted Emission from 150 KHz to 30 MHz



Frequency (MHz)	QuasiPeak (dB $\mu$ V)	Average (dB $\mu$ V)	Limit (dB $\mu$ V)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Filter	Corr. (dB)
0.35	27.19	---	58.90	31.71	1000.0	9.000	N	ON	19.18
0.36	---	21.30	48.69	27.39	1000.0	9.000	N	ON	19.19
0.40	---	22.91	47.86	24.95	1000.0	9.000	N	ON	19.23
0.43	25.47	---	57.32	31.85	1000.0	9.000	N	ON	19.23
1.28	20.12	---	56.00	35.88	1000.0	9.000	N	ON	19.23
1.54	---	19.57	46.00	26.43	1000.0	9.000	N	ON	19.18
3.45	---	20.85	46.00	25.15	1000.0	9.000	N	ON	19.05
4.38	22.71	---	56.00	33.29	1000.0	9.000	N	ON	19.10
9.10	---	21.44	50.00	28.56	1000.0	9.000	N	ON	19.30
10.21	26.00	---	60.00	34.00	1000.0	9.000	N	ON	19.42
18.09	28.96	---	60.00	31.04	1000.0	9.000	N	ON	19.41
18.15	---	22.16	50.00	27.84	1000.0	9.000	N	ON	19.40

Remark: Correct factor=cable loss + LISN factor

N line

Conducted Emission from 150 KHz to 30 MHz



## 6. Main Test Instruments

Name	Manufacturer	Type	Serial Number	Calibration Date	Expiration Time
Spectrum Analyzer	R&S	FSV30	100815	2018-12-16	2019-12-15
EMI Test Receiver	R&S	ESCI	100948	2019-05-19	2020-05-18
Loop Antenna	SCHWARZBECK	FMZB1519	1519-047	2017-09-26	2019-09-25
TRILOG Broadband Antenna	Schwarzbeck	VULB 9163	9163-201	2017-11-18	2019-11-17
EMI Test Receiver	R&S	ESR	101667	2019-05-19	2020-05-18
LISN	R&S	ENV216	101171	2016-12-16	2019-12-15
Spectrum Analyzer	Agilent	N9020A	MY52330084	2019-05-19	2020-05-18
TEMPERATURE CHAMBER	WEISS	VT4002	582261194500 10	2018-12-16	2019-12-15
RF Cable	Agilent	SMA 15cm	0001	2019-06-14	2019-09-13
Software	R&S	EMC32	9.26.0	/	/

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

## ANNEX A: EUT Appearance and Test Setup

### A.1 EUT Appearance





a: EUT



Adapter 1



Adapter 2

b: Adapter

**Picture 1 EUT and Accessory**

## A.2 Test Setup



9kHz - 30MHz



30M Hz-1GHz

**Picture 2 Radiated Emission Test Setup**



**Picture 3 Conducted Emission Test Setup**