

CAS901 Measurement Microphone Verification and Calibration System



Features

Complies with GB/T 20441.6-2017, JJG 175-2015, JJF 1738-2019, JJF 1653-2017, JJG 1172-

2019 standards

High-precision measurement system supporting microphone sensitivity, frequency response, phase matching, maximum SPL, and more

Suitable for 1", 1/2", 1/4" and other microphone specifications

Comes with test software featuring various test/analysis modules for easy operation

Robust database for historical measurement data, intuitive comparison and monitoring of microphone data changes

Helps enterprises build self-inspection systems for microphones, saving time and cost, and better meeting ISO9000 annual verification requirements

Applications

Verification and certification of working standard microphones
Periodic inspection and accuracy checking of microphones
Phase matching and selection for microphone arrays
Standard metrology for metrology institutes, certification bodies, and manufacturing enterprises (e.g., automotive manufacturers)

Product Introduction

CAS901 is a newly launched microphone verification and calibration system by Beijing BSWA Technology. It provides solutions for metrology units, production lines, military enterprises, and university research institutes to build microphone metrology and calibration systems, helping customers meet ISO 9000 certification requirements for microphone measurement accuracy.

The CAS901 measurement system includes hardware and test software, supporting the electrostatic actuator method, free-field comparison method, and dynamic range limit testing. It measures important parameters such as microphone sensitivity, frequency response, phase, and maximum sound pressure level.

The system hardware meets the requirements of GB/T 20441.6-2017, JJG 175-2015, JJF 1738-2019, JJF 1653-2017, JJG 1172-2019 and other calibration and verification regulations.

VA-Audio test software runs on Windows and features multiple test modules. A single test can yield multiple parameter results. It supports importing correction values and automatically applies them for free-field frequency response. Test results can be saved and imported for intuitive comparison, greatly improving microphone testing efficiency.

Hardware System

Component	Description
Sound Source	CA918 free-field standard sound source, CA925 high sound pressure calibrator
Data Acquisition	NI PXIe dual-channel input/output acquisition card, 204.8 kHz sampling rate, 24-bit
Power Amplifier	BSWA PA700 low-distortion D-class amp, max 270W (4Ω/8Ω)
Electrostatic Actuator	BSWA EA011/EA012 electrostatic actuators, for 1", 1/2", 1/4"

Power Supply	BSWA AS021 actuator power supply, output +800VDC
Others	BSWA CS002 microphone test stand, effectively reduces environmental noise

Note: For detailed system configurations and product specifications, please refer to the BSWA official website or contact the sales department.

Hardware Details

1. Sound Source

- **CA918 Free-field Standard Sound Source:** 3.5-inch high-sensitivity speaker unit, frequency range 125 Hz–20 kHz, for use in anechoic or free-field environments; compliant with JJG1172 working standard microphone (free-field comparison method) regulations.
- **CA925 High Sound Pressure Calibrator:** Produces stable 170 dB@500 Hz; compliant with JJF1738 for dynamic range calibration.



2. Data Acquisition

- NI PXIe dual-channel input/output data acquisition hardware, 204.8 kHz, 24-bit, Thunderbolt interface.



3. Power Amplifier

- **PA700 Low-Noise D-Class Amplifier:** Max output 270W (4Ω/8Ω), built-in noise generator, Bluetooth and remote control, output noise as low as 120uVRMS (A- weighting).



4. Electrostatic Actuator

- **EA011/EA012 Electrostatic Actuator:** Excites diaphragm with electrical signals, compliant with IEC 61094-6, ANSI S1.10, for 1", 1/2", 1/4" microphones.



5. Power Supply

- **AS021 Actuator Power Supply:** Powers electrostatic actuator, outputs +0V, +200V, +800V DC.



6. Others

- **CS002 Microphone Test Stand:** Sound isolation chamber with built-in banana socket, excellent isolation performance.



Software System

The CAS901 system uses BSWA's self-developed VA-Audio test software, designed for performance testing of electroacoustic products such as speakers, microphones, and mobile phones.

VA-Audio, together with dual-channel input/output acquisition, controls signal acquisition and output for complex electroacoustic tests including frequency response, sensitivity, and phase difference.

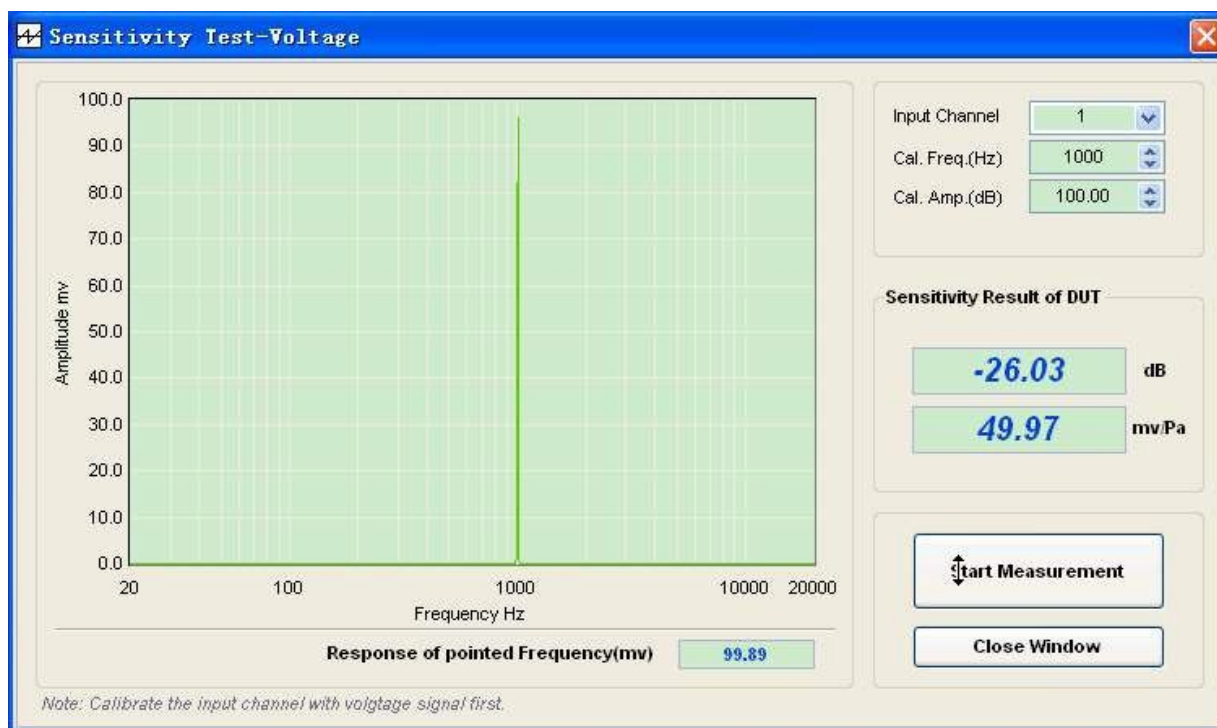
Recommended Installation Configuration

- Processor: Pentium 2GHz or higher, dual-core recommended
Operating System: Windows NT 4.0, 2000, XP, or Vista Memory: 1GB
- Hard Drive: 60GB
- Monitor: 14 inches

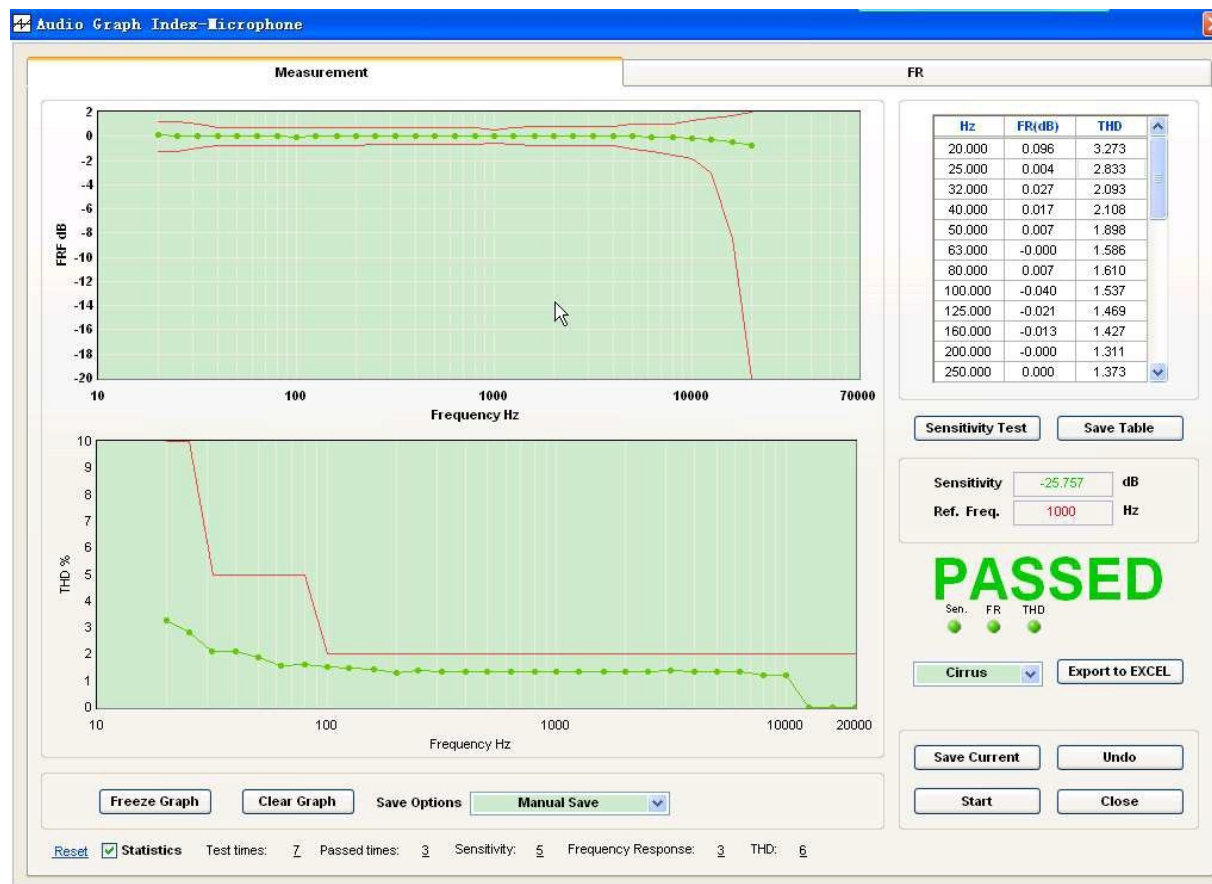
Test Interfaces



VA-Audio Main Interface



Sensitivity Test Interface



Settings Interface

Setting_Microphone Test

Load Edit Cancel

BSWA TECH 

Guard Band

Hz	FR: Lower Limit(dB)	FR: Upper Limit (dB)	Distortion Limit(%)
100.0	-3.00	3.00	3.000
125.0	-3.00	3.00	3.000
250.0	-3.00	3.00	3.000
500.0	-3.00	3.00	3.000
1000.0	-3.00	3.00	3.000
2000.0	-3.00	3.00	3.000
4000.0	-3.00	3.00	3.000
8000.0	-3.00	3.00	3.000

Sensitivity Permissible Value

-30 ~ -20 dB @ 1000 Hz

Reference Microphone

Sensitivity -26 dB @ 1000 Hz

Standard Value of Ref. Mic. 94 dB

Standard FR Curve Disable

Start

Direct Method (single channel)

Test Method Stepped-sine

Freq. Type ISO R10 (1/3 Octave)

Freq. Range (Hz) 100 ~ 8000

Fs/s(Enable only lin/log freq.sweep) 50

Test Time (S) 2

Test/Calibrated Channel 1

Output Amplitude(V) 20000

☐ Using Calibrated Output

☒ FR Ref. Freq.(Hz) 250.0

Distortion Setting THD

FR Corrections

Display Mode 1/3 Octave

Save Format One Result One File

Measure Sen.and FR together

According to the hardware setting, the max frequency is: 22050 Hz, and the build-in ICCP is: ON

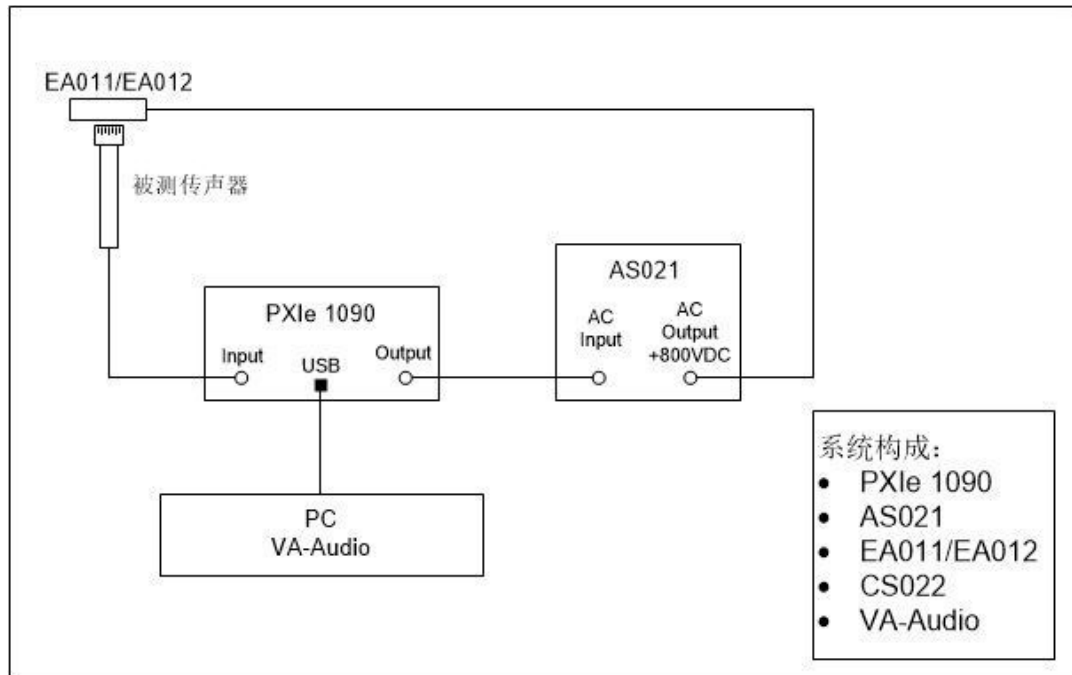
Test Interface

Test Schemes

1. Electrostatic Actuator Test Method

Designed according to JJG 175-2015, can measure:

- Pressure field frequency response (20 Hz–100 kHz)
- Sensitivity
- Phase difference
- Harmonic distortion

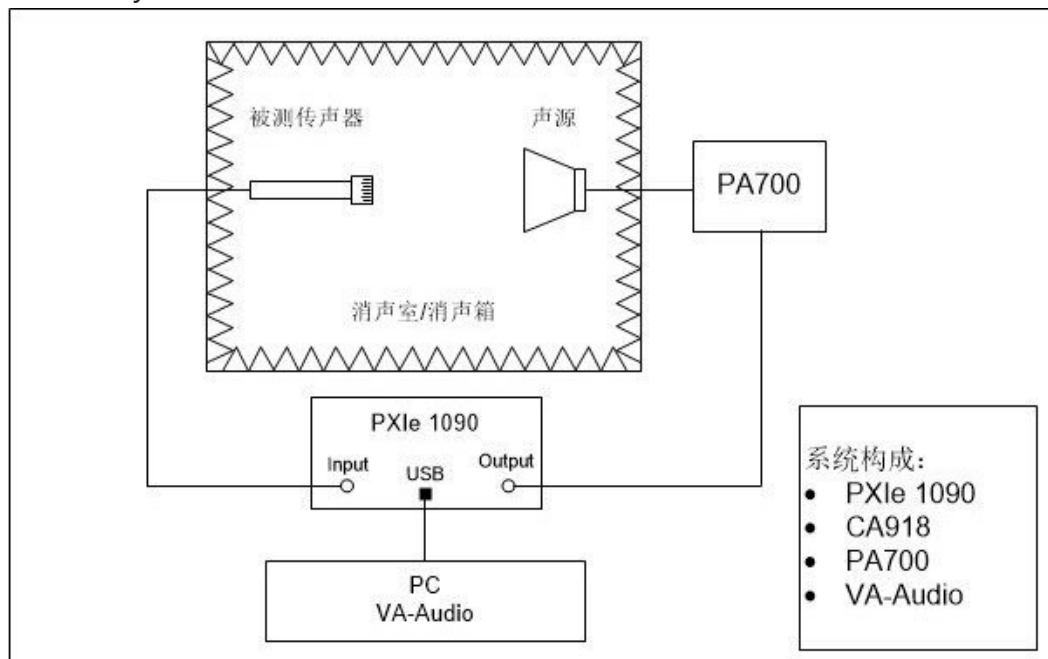


VA-Audio supports importing free-field correction values and automatically generates corrected frequency response curves.

2. Free-field Test Method

Designed according to JJG 1172-2019, can measure:

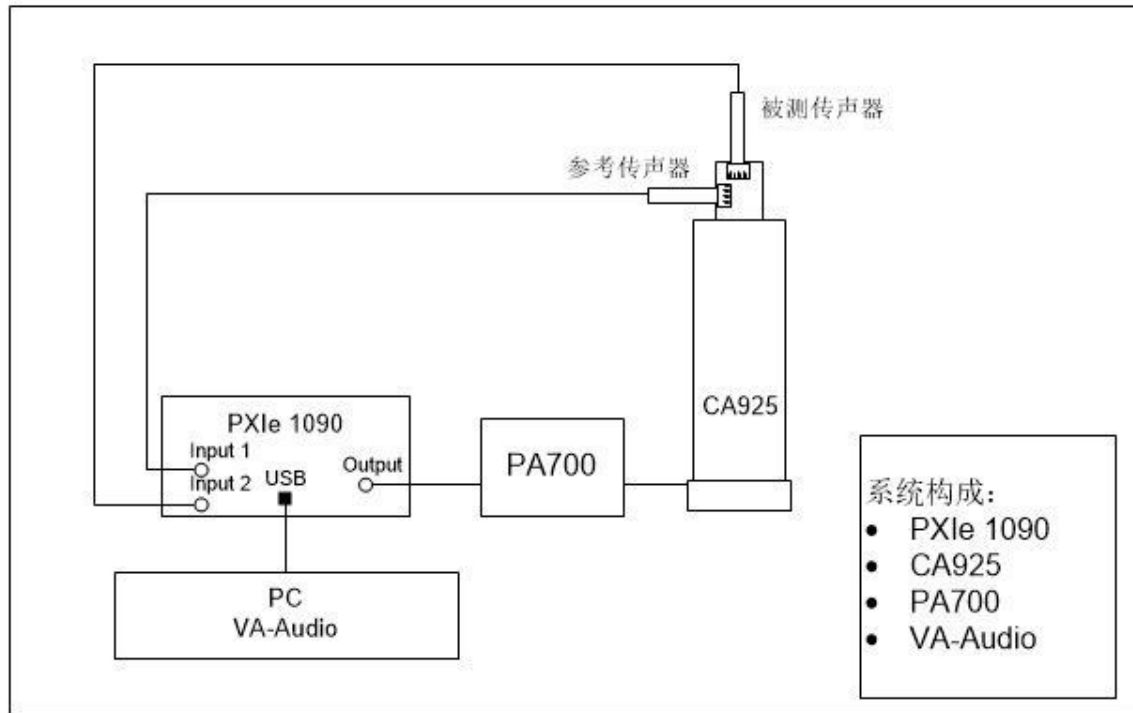
- Free-field frequency response
- Sensitivity



3. Microphone Dynamic Range Upper Limit Test

Designed according to JJF1738-2019, can measure:

- Microphone dynamic range upper limit



Contact:

BSWA Technology Co., Ltd.

Room 1003, Beihuan Center, No.18 Yumin Road, Xicheng District, Beijing, 100029

Tel: 010-5128 5118 | Fax: 010-8225 1626

Email: bswa@bswa.com.cn | Website: www.bswa.com.cn

© Beijing BSWA Acoustic Technology Co., Ltd. Content subject to change without notice.