



BSWA Impedance Tube Solutions



BSWA Company Introduction

Established in 1998, BSWA Technology Co., Ltd. is becoming the preferred supplier for acoustical measurements. With headquarter located in Beijing, BSWA currently employs 100 staffs with branch offices in Shanghai, Guangzhou, and Chengdu. BSWA's products are distributed in over 40 countries through our sales partners.

BSWA Products cover a full range of acoustic measurement devices. The products are sorted into easy-to-follow sections:

- Microphones
- Sound level meter
- Measuring systems
- Material testing
- Audio testing
- Outdoor monitoring systems
- Sound sources
- Cable and accessories

Impedance Tubes

BSWA SW series Impedance Tubes can accurately measure sound absorption coefficients and impedance according to ISO10534-2. They also support the sound transmission loss measurements based on the Transfer Function Method. The Transfer Function Method separates the incident and reflected energy from the measured transfer function, and then estimates the acoustic properties of the tested sample installed in the tube.

The SW series Impedance Tubes are specially designed not only to work with the cut samples, but also for direct use in the field. The small size and durable aluminum construction make it easy to be transported and used for estimating the properties of walls, ceilings, installed building materials, road surfaces, different ground surfaces, interiors of vehicles, and etc. BSWA offers the complete set of Impedance Tube system, which includes: the tubes, microphones; DAQ hardware and measurement software.

BSWA 1/4" microphones MPA416, which have excellent phase matches, are ideal for impedance applications. The microphones are directly connected to optional 2-channel MC3242 or 4-channel MC3642 data acquisition hardware. PA50 power amplifier is used to drive the loud speaker in the impedance tube. The BSWA VA-Lab software provides all measurement functions for sound absorption and transmission loss testing.

Specifications

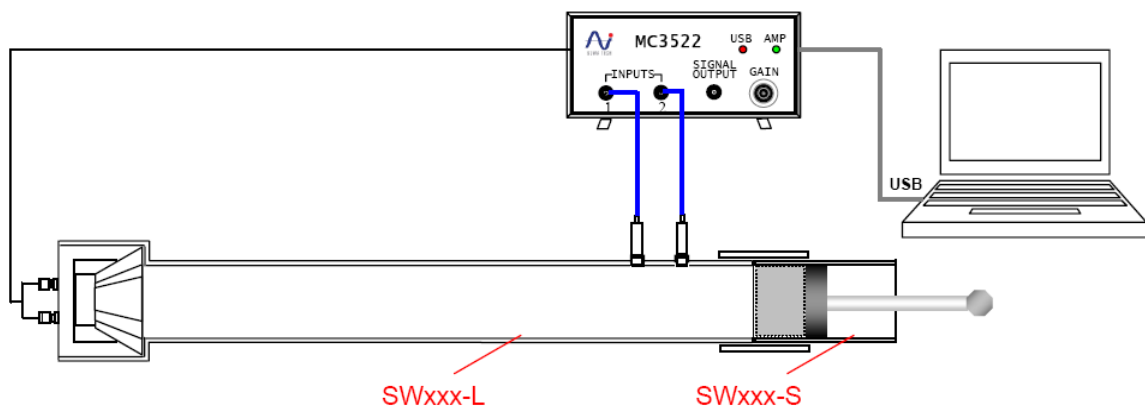
| BSWA IMPEDANCE TUBES | | | | | | |
|--------------------------------|---|------------|-----------|------------|--|------------|
| Model | SW230 | SW260 | SW420 | SW470 | SW422 | SW477 |
| Value to be Measured | Sound Absorption Coefficient (α) | | | | Sound Absorption Coefficient (α) and Transmission Loss(TL) | |
| Standard | GB/T-18696, 2-2002, ISO10534-2, 1998, ASTM 1050 | | | | Sound Absorption Standard: GB/T-18696, 2-2002, ISO10534-2, 1998; ASTM 1050 ASTM 2611-09 | |
| Frequency Range (Hz) | 125 ~ 3150 | 125 ~ 6300 | 63 ~ 1800 | 800 ~ 6300 | 63 ~ 1800 | 800 ~ 6300 |
| Inner Diameter of Testing Tube | 60 mm | 60 & 30 mm | 100 mm | 30 mm | 100 mm | 30 mm |
| Loud speaker | 4 " in diameter, 20 Watts, 8 Ohm | | | | | |
| OPTIONAL ITEMS | | | | | | |
| 1/4" Microphone | MPA416 | | | | | |
| Data Acquisition Card | MC3022+PA50 or MC3522 | | | | MC3242 | |
| Power Amplifier | PA50 | | | | | |
| Software | VA-Lab2 Basic + VA-Lab2 IMP-A | | | | VA-Lab4 Basic + VA-Lab4 IMP-AT | |

Material Testing System

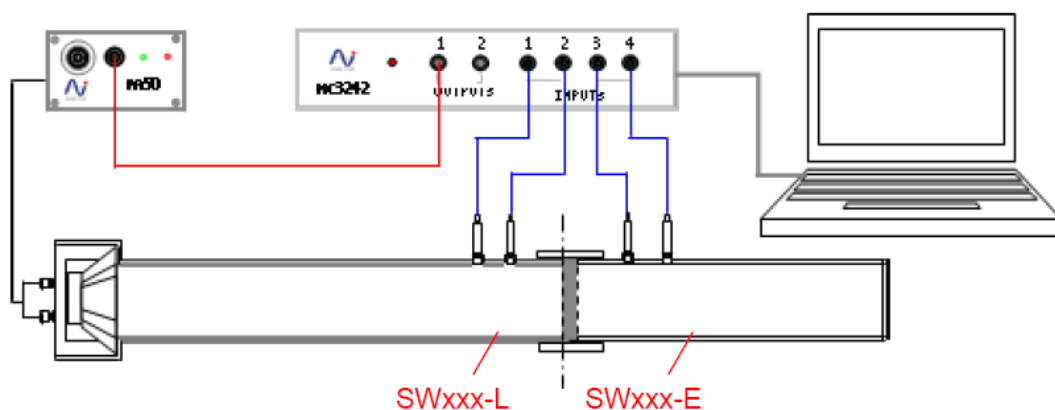
BSWA VA-Lab software has the Impedance Tube Module (VALab IMP) which supports sound absorption and sound insulation measurement for BSWA SW series impedance tubes. The software works with BSWA MC3022, MC3522, MC3242 and MC3642 hardware for data acquisition and analysis. The VA-Lab IMP supports two methods to measure the absorption coefficients of material:

- Method using Standing Wave Ratio (ISO10534-1)
- Transfer Function Method (ISO10534-2)

The VA-Lab IMP also supports four microphones method for sound transmission loss measurements

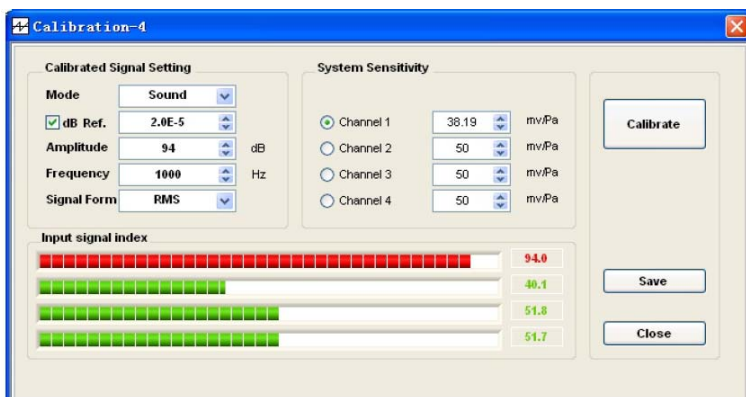


Impedance TubeSystem for Sound Absorption Measurement

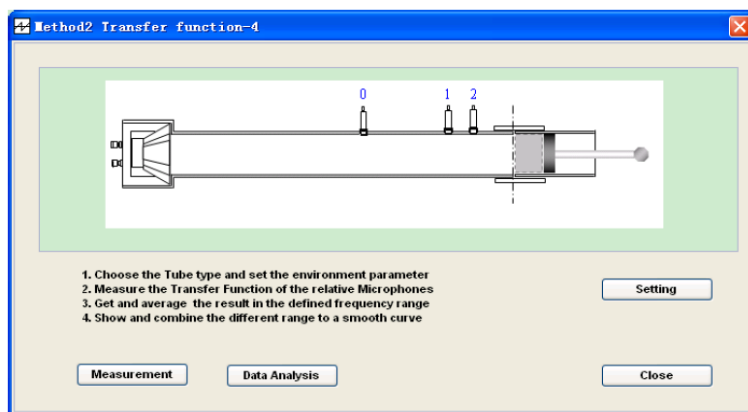


Impedance TubeSystem for Transmission Loss Measurement

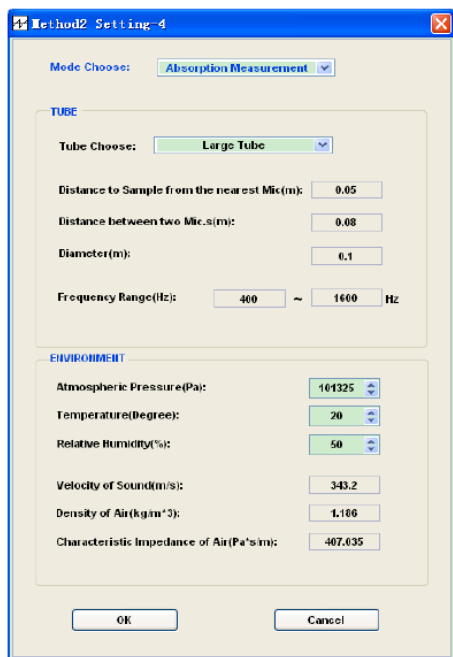
Software Interfaces



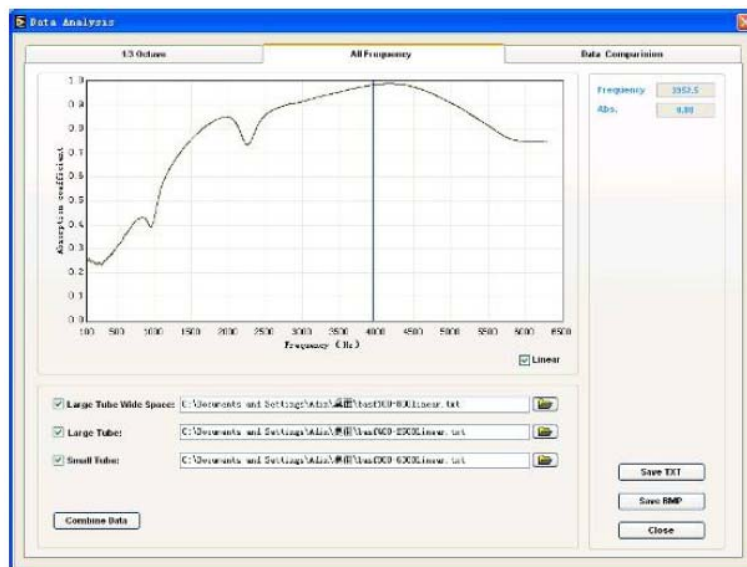
Microphone Calibration Interface



Impedance Tube Measurement Interface



Impedance Tube Setting Interface



Data Combination Interface

Typical Complete Setup for Measurement of Sound Absorption and Transmission Loss (Frequency Range: 63 Hz ~6300 Hz)

| BSWA IMPEDANCE TUBE SYSTEM SW422+SW477 | | | |
|--|----------------|---|--------|
| # | PRODUCT PART # | DESCRIPTION | NUMBER |
| 1 | SW422+SW477 | Impedance tubes, SW422 is of 100mm inner diameter and SW477 of 30mm inner diameter. For accurate measurement of sound absorption coefficients and transmission loss(63 ~ 6300 Hz) | 1 |
| 2 | PA50 | Power Amplifier of 50W, to power the loudspeaker in the impedance tube | 1 |
| 3 | MC 3242 | Analyzer with 4 ICP input channels and 2 signal output channels, USB powered, 0 ~ 20kHz, to be connected with laptop | 1 |
| 4 | MPA 416 | 1/4" microphone with Integrated ICP Preamplifier | 4 |
| 5 | CBB005 | BNC to BNC cables, 5m, to connect PA50 to MC3242 | 1 |
| 6 | CBS005 | BNC to SMB cables, 5m, to connect MPA416 to MC3242 | 4 |
| 7 | CAA002 | 2m cable of banana connectors, to connect PA50 to the loudspeaker in the impedance tube | 1 |
| 8 | CA115 | Sound Calibrator, 1000Hz, 114dB, Type 2, with adaptor for 1/2" and 1/4" microphones | 1 |
| 9 | VA-Lab4 BASIC | Base software module for measurement of noise and vibration, used for 4-channel analyzer | 1 |
| 10 | VA-Lab4 IMP-AT | Software module for measurement of material impedance values (4 mics are needed), for measurement and the calculation of Sound Absorption and Transmission Loss of material. | 1 |