

# User Manual



## SW420R Impedance Tube

SW420R Impedance Tube User Manual

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v1.1

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The specification of product is subject to changes without notice

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## Change History

Version	Date	Changes	Handle by
1.0	2014.09.22	Initial version.	Zhang Baojian
1.1	2018.11.21	Modified the format.	Li Huimin

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## 1. Introduction

### 1.1 General Description

**SW420R** is designed according to ISO 13472, which specifies a test method for measuring the sound absorption properties of road surfaces on site with impedance tube. This method enables evaluation of sound absorption characteristics without damaging the surface. The test results also can be used to qualify the absorption characteristics accordance with ISO 362 and ISO 18044.

The use of **SW420R** and the algorithm is the same as description in ISO 10534 (equivalent to GB/T 18696), VA-Lab IMP module can be used directly with this product.

### 1.2 Applications

- Measurement the sound absorption properties of road surfaces on site

### 1.3 Features

- Specially designed for measurement of sound absorption properties of road surfaces
- Integrated design, portable and stable
- Selected sealing material, reduce leak of sound signal

### 1.4 Specification

SW420R Impedance Tube	
Standards	ISO 13472-2:2010, ISO 10534-2:1998, GB/T 18696.2-2002
Frequency Range	250 Hz ~ 1600 Hz (1/3 Octave) / 220 Hz ~ 1800 Hz
Inner diameter	100 mm
Length of tube	680 mm (including handle)
Microphones	1/4" ICCP MPA416
Microphone Spacing	80 mm
Height of microphone to ground	150 mm
Totally reflective sample	Stainless steel plate: Ø195mm x 10mm
Weight	14 kg
Shipping case size (mm)	W740 x H360 x D410

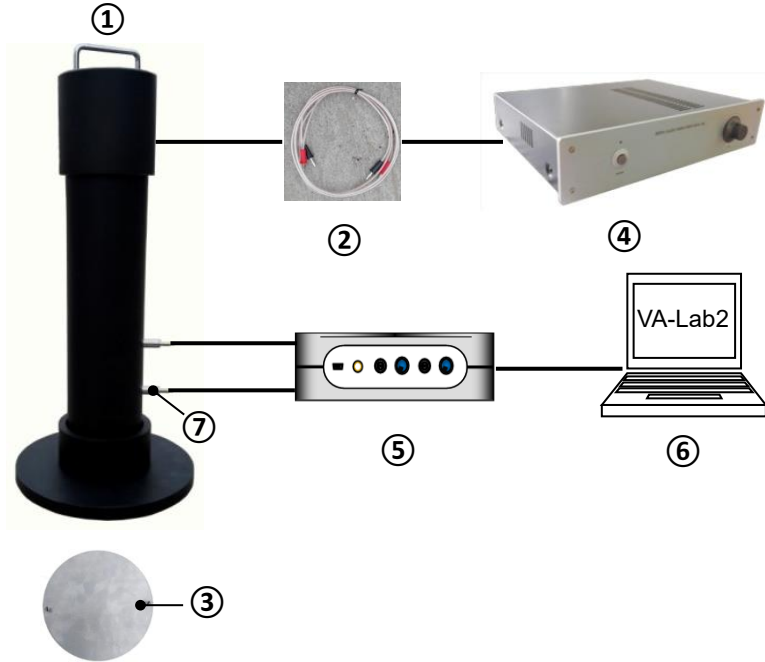
### 1.5 Packing List

No.	Type	Description
<b>Standard</b>		
1	SW420R	Impedance tube for road surface
2	Audio cables	3 meters banana plug cable
3	Totally reflective sample	Stainless steel plate
4	User Manual	User Manual
5	Certificate of Calibration	Report of factory calibration
6	Shipping Case	Carrying and shipping case



## 2. Instructions

### 2.1 Structure and Assembly



1. **SW420R Impedance tube**

2. **Audio cables**

Audio cable with banana plug used to input the signal to the impedance tube.

3. **Totally reflective sample**

4. **Power Amplifier (optional)**

5. **Data Acquisition (optional)**

6. **Computer (optional)**

7. **Microphone (optional)**

1/4" IEPE MI19

## 2.2 How to Use

- Put the SW420R impedance tube on the road surface, make sure the tube be placement stability.
- Connect the tube and the power amplifier (optional) by audio cable. The signal generator and sound card can be use as signal source.
- Insert the MI19 microphone (optional) into the microphone hole of the tube, and connects the microphone to data acquisition via cable to build a measurement system.
- Input the driving signal to check the speaker inside the impedance tube working properly, then star measurement.

## 3. Operation Notes

### 3.1 Operation

- Keep out the water and any other liquid due to no waterproof design on this product.
- Please follow the introduction and using step in the user manual. Do not drop, knock or shake the product. Any operation over the limit could damage the product.

### 3.2 Calibration

SW420R has been calibrated before sales. Keep regular calibration can ensure the accuracy of the measurement. BSWA provide the calibration service for acoustic products.

### 3.3 Warranty

BSWA can provide warranty service during the warranty period. The component could be replaced according to the determination of BSWA to solve the issue caused by materials, design or manufacture.

Please refer to the product warranty promise in sales contract. Do not try to open or repair the device by customer. Any unauthorized behavior will result in loss warranty of this product

### 3.4 Customer Service Phone Number

Please do not hesitate to contact us for any issue:

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Customer Service	+86-10-51285118	(workday 9:00~17:00)
Phone Number:		

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Sales Service	Please visit BSWA website <a href="http://www.bswa-tech.com">www.bswa-tech.com</a> to find the sales	
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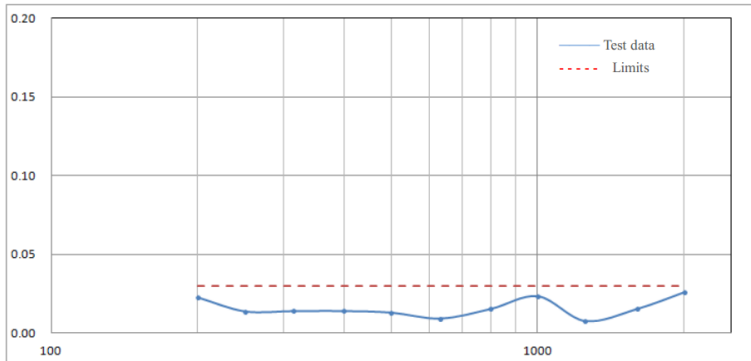
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Phone Number:      number of your region.

## Annex Typical Measured Data of SW420R

### 1. Measured data of totally reflective sample



Hz	Abs.	Limits
250	0.014	0.03
315	0.014	0.03
400	0.014	0.03
500	0.013	0.03
630	0.009	0.03
800	0.015	0.03
1000	0.023	0.03
1250	0.007	0.03
1600	0.015	0.03

### 2. Typical test results of concrete: three test results to verify its repeatability

