Annex-1-Specifications

Acoustic Impedance Tube - Material Acoustic Testing System Specifications

Overview

Deliverable product is complete set of on-table Material Acoustic Test System (MATS), which should have next 3 functions:

- Material Sound Transmission Loss Testing
- Material Acoustic Impedance Testing
- Material Sound Absorption Coefficient

Please consider that this testing system is only for materials, not for room/space acoustic testing.

Deliverable MATS is standalone system which only requires to be connected to the computer or Notebook where should be installed its own software, which allows to make Material Acoustic Testing Process and to see the results as well. Acoustic Testing System connection to the PC/Notebook should be possible via USB port and deliverable system should include all necessary cabling and software to connect it to the PC/Notebook.

Material Acoustic Testing System compliance with standards/methods:

- ASTM E-2611 (4-Pole Transfer Matrix Method)
- ASTM E-1050 and ISO 10534-2 (Transfer Function Method)

Material Acoustic Testing System Specifications:

Material Acoustic Testing measurement frequency range should be as minimum in 50 Hz - 6400 Hz range. Higher range is accepted. Material Acoustic Testing System should include as minimum two different size Impedance Tube. First with minimum 100 mm diameter for low frequency measurement and second with minimum 30 mm diameter for high frequency measurement.

System should have Acoustic leakage-proof construction.

Software features:

Software should have possibilities to determine:

- Sound barrier properties (sound transmission loss, characteristic impedance, characteristic wave number);
- Sound absorbing properties (sound absorption coefficient, complex reflection coefficient, surface impedance)
- Dynamic density and dynamic bulk modulus

Software also should have next possibilities:

- Random incidence absorption estimation models
- Tube attenuation removal algorithm for deficient absorptive materials
- Conical adapter correction for transmission loss measurements
- Amplitude and phase calibration of the microphones
- Selectable frequency resolution and number of averages
- File export in formats ASCII, MS Excel™;

System components

System should have 4 input and 1 output channels.
Measurement Microphone with 10 Hz to 20 kHz frequency range, Dynamic range 33 dB(A) to 142 dB, minimum.

Tube dimensions and quantities:

- For Low Frequency testing ⌀ 100 mm with minimum 945 mm length;
- For Low Frequency testing ⌀ 100 mm with minimum 1130 mm length;
- For High Frequency testing ⌀ 30mm with minimum 875 mm length;
- For High Frequency testing ⌀ 30 mm with minimum 925 mm length;

System should have built-in amplifier with minimum 20W power, to power the loudspeaker in the impedance tube.

Deliverable system should come with:

- Transportation hard case.
- Demo melamine foam for training and system check
- Quality test report
- Calibration certificate
- Sound Calibrator, battery-operated precision class 1 microphone calibrator (conforming to IEC 60942 and ANSI S1.40)
- User manual for installation and software
- Cables for connection Tubes and system to the computer/software

Additional requirements

System should be delivered on next address: 24g, Al. Kazbegi Avenue, Tbilisi, Georgia, 0160
System factory warranty requirement is minimum 3 years after system delivery and delivery-acceptance signature.