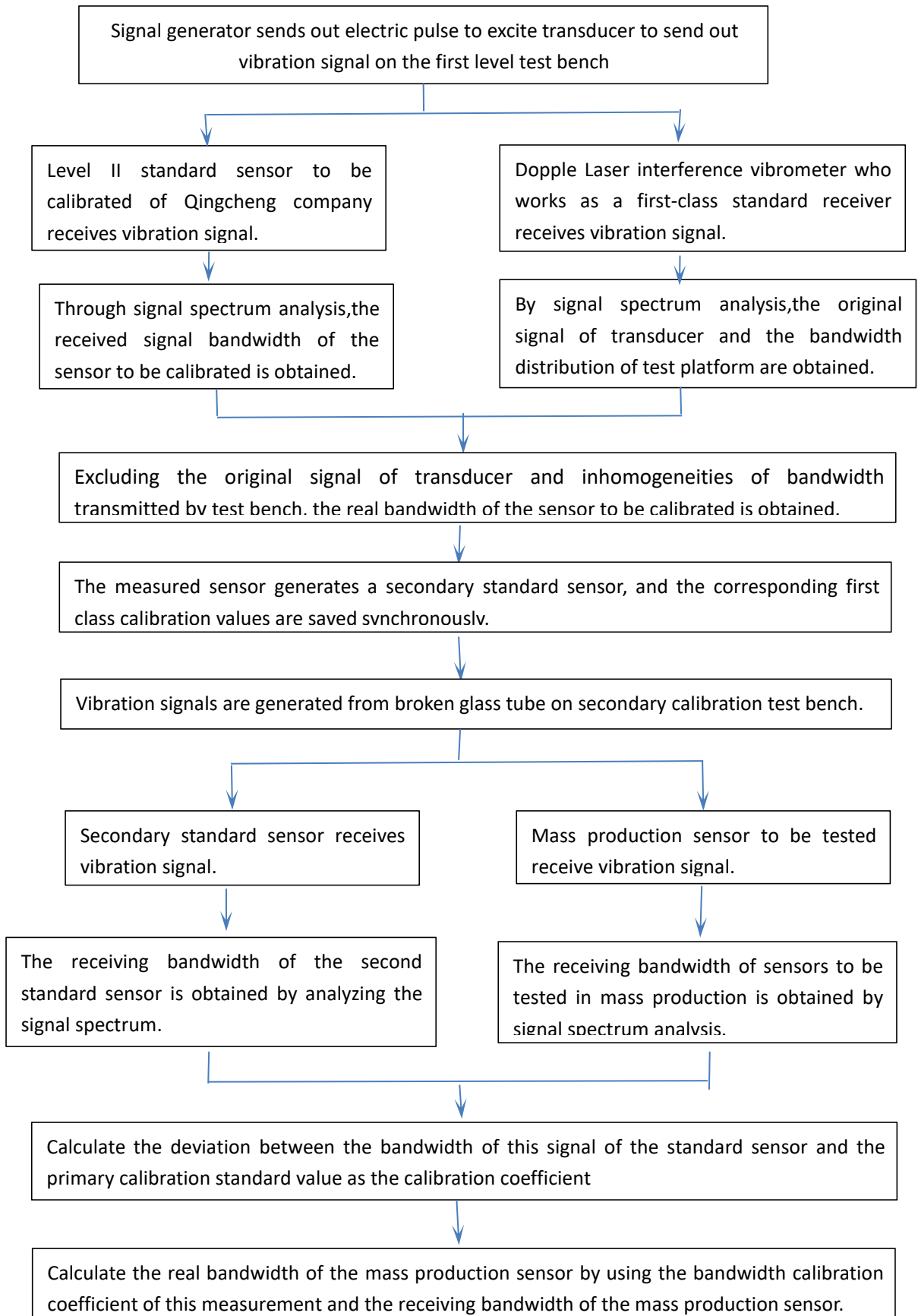


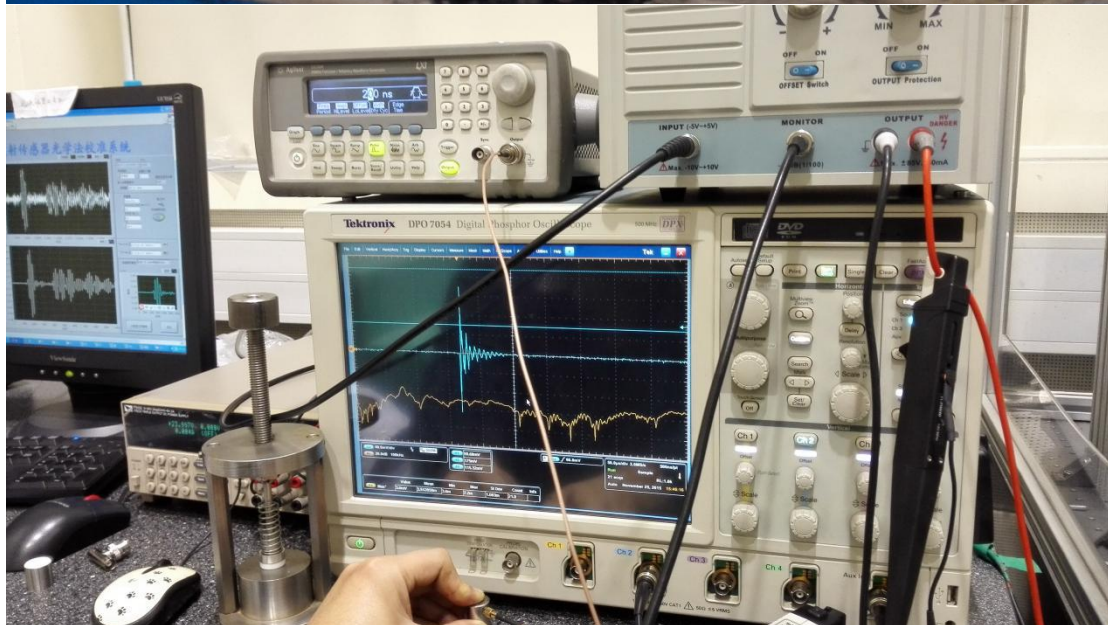
**Brief introduction of acoustic emission sensor calibration system of  
QingCheng AE Institute(GuangZhou) Co.,ltd  
Acoustic Emission Sensor Calibration Standard Transfer Flow Chart**



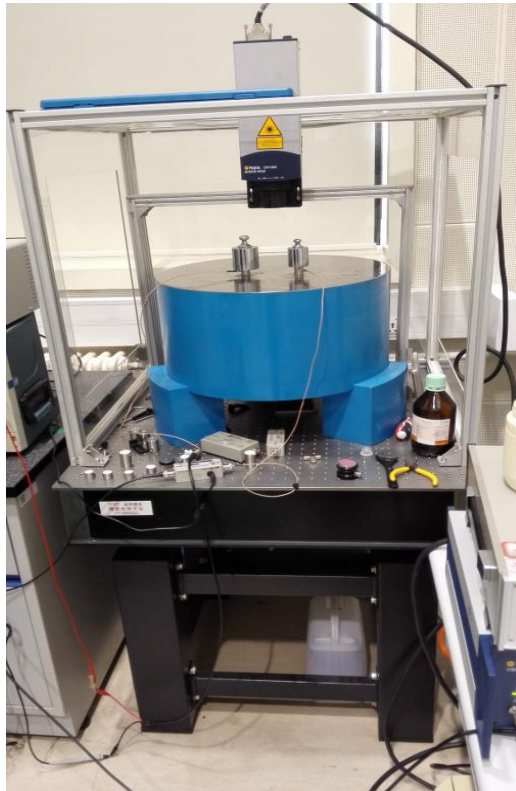
**1.** According to ISO12713 (ASTM e1106, GB / t19800), the first level calibration of acoustic emission sensor is carried out by speed method。

**1.1** The sensors to be calibrated selected by QingCheng company shall be calibrated by China Metrology Institute at the first level.

**1.2** China Metrology Institute uses signal generator to send excitation electric signal, high frequency transducer as signal source to send vibration signal for calibration.



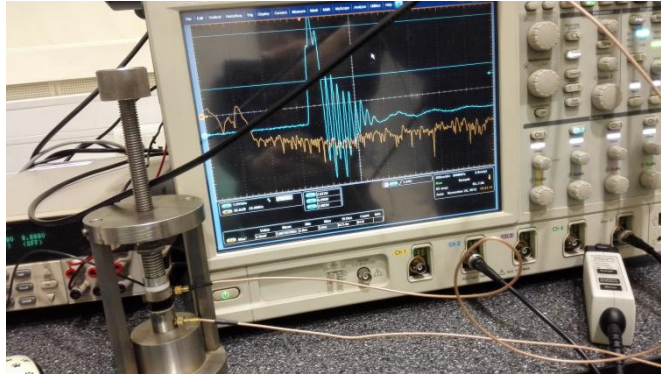
**1.3** The standard receiving equipment adopts the Doppler laser interference vibrometer as the first level standard receiver to receive the vibration signal, with the unit of speed (M / s). The oscilloscope is used for spectrum analysis and recording.



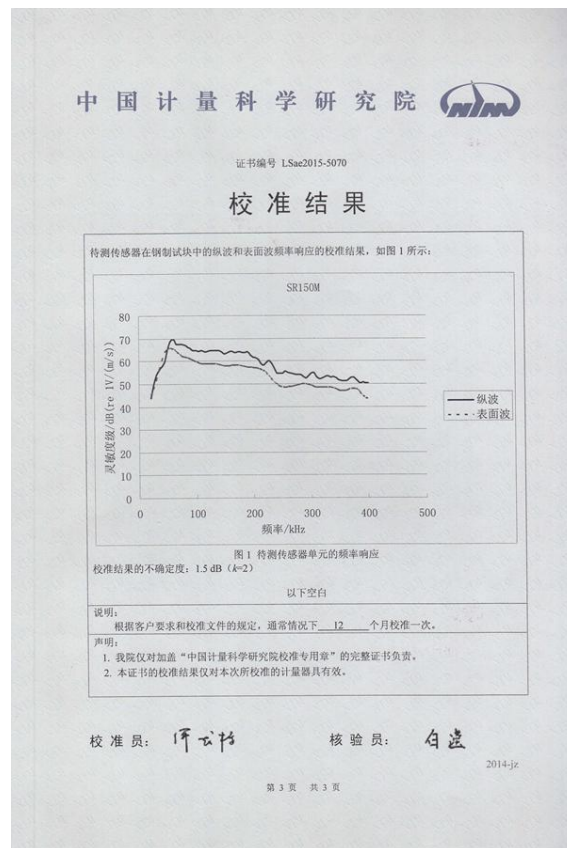
**1.4** The sensor to be calibrated and the standard receiver receive the signal from the same signal source synchronously, and use another channel of the oscilloscope to receive the signal, the unit is voltage (V), do spectrum analysis and record.



**1.5** According to the 1 V corresponding to 1 m / s as 0 dB reference, convert the voltage equivalent of the calibrated sensor corresponding to the receiving speed equivalent of each frequency point of the interference vibrometer in the frequency domain to the DB value.

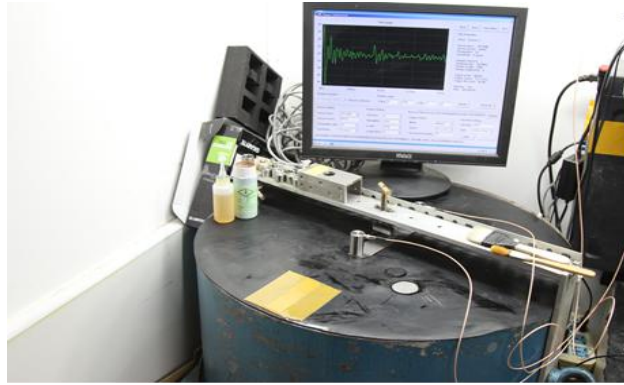


1.6 The DB value of each frequency point in the frequency domain corresponding to the calibrated sensor shall be archived, the curve shall be drawn, and the standard sensor shall be generated as the secondary calibrated standard sensor

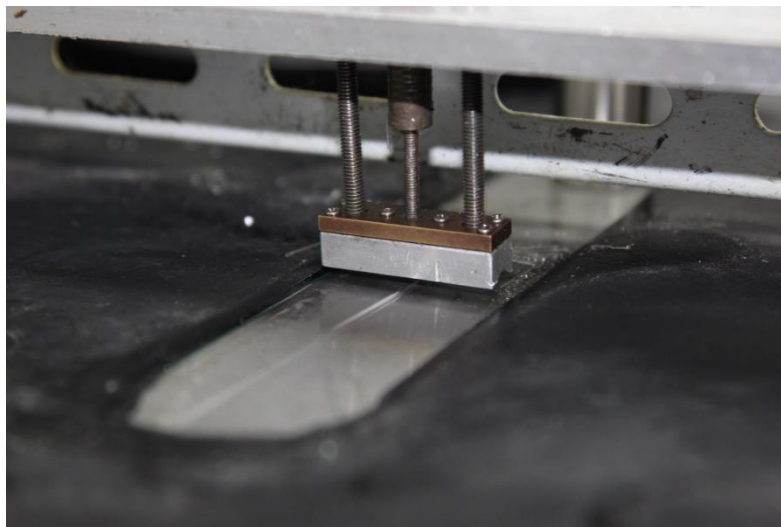


2. According to iso12714 (ASTM e1781, GB / t19801), the standard sensor calibrated by the Metrology Institute is used for secondary calibration by QingCheng company

2.1 QingCheng AE Institute(GuangZhou) Co.,ltd. has developed and designed the sensor calibration system, which is composed of test bench、 acquisition instrument and test software.



2.2 On the test bench, use 0.3mm hollow glass tube to send out vibration signal for calibration



2.3 The standard sensor receives the signal by using the special acquisition card of QingCheng company, uses the special test software of QingCheng company to do spectrum analysis, directly converts to DB value and records.

**Time domain** (points to the waveform graph)

**File info** (points to File Properties)

**Displaying settings** (points to the display channels and range controls)

**Sensor Settings** (points to Sensor Spec, Serials, Preamp, Sensitivity)

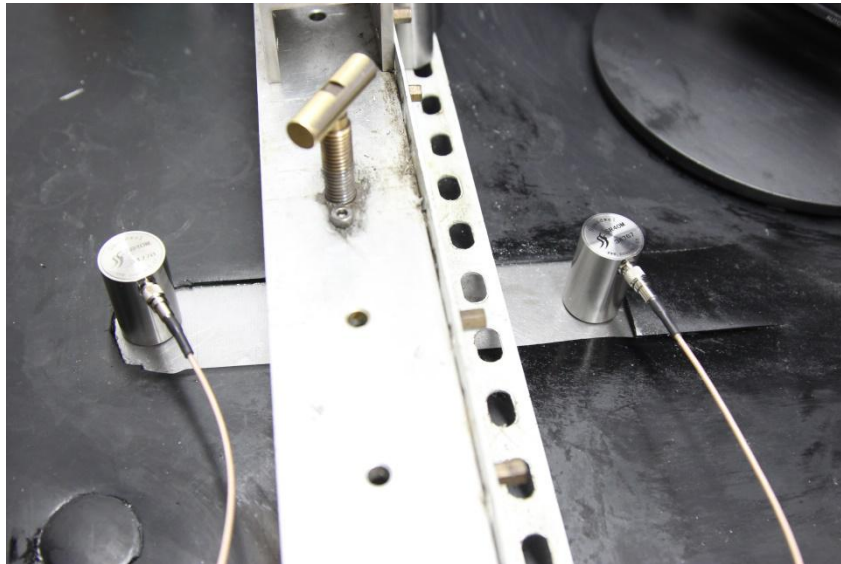
**Acquisition Settings** (points to the bottom of the software window)

**Threshold setting** (points to the Threshold field)

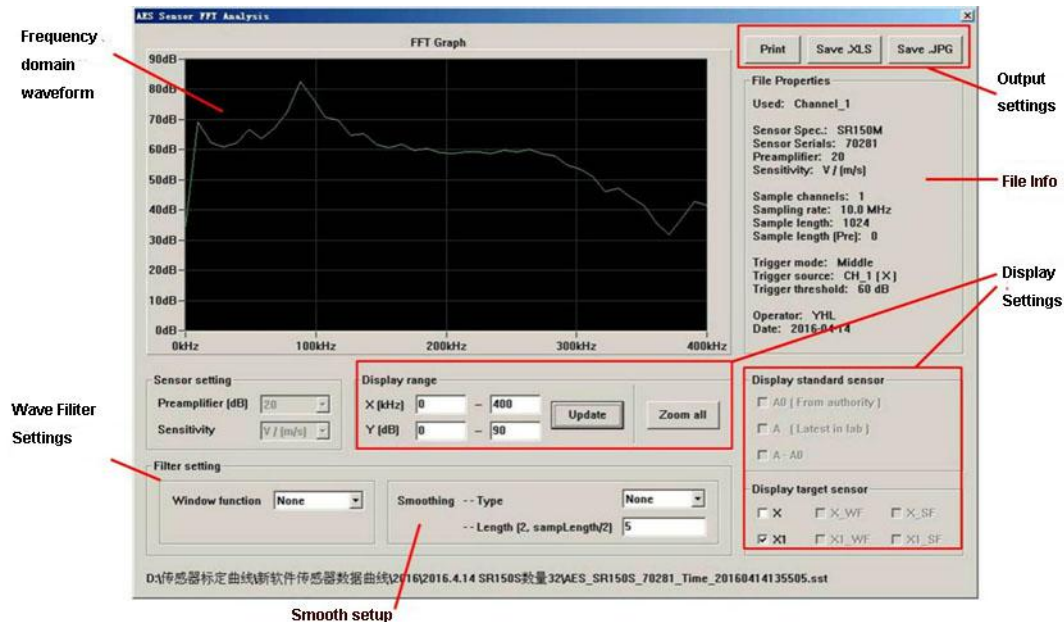
**Acquisition Control** (points to Start and Stop buttons)

**Basic info Settings** (points to Operator and Date fields)

2.4 The sensor to be calibrated and the standard sensor receive the signal from the same signal source synchronously, and the other channel of the acquisition card receives the signal. The special test software is used for spectrum analysis, which is directly converted to DB value and recorded。

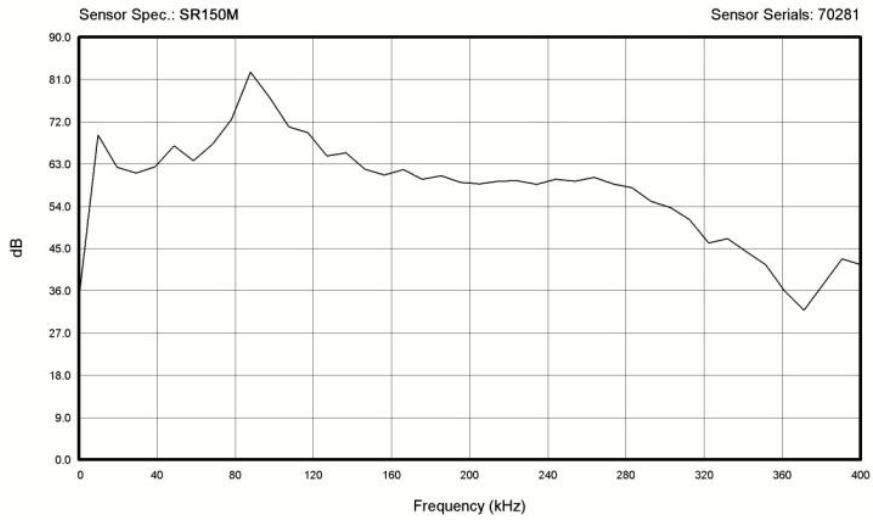


2.5 Using the spectrum value of the standard sensor given by the Metrology Institute, subtracting the standard sensor's spectrum value of the received signal of this test, thus generate the calibration coefficient of each frequency point of this measurement.



2.6 Adding the spectrum value which was received by the calibrated sensor of this test to the calibration coefficient described in the pragrahp 1.5 , then obtain the secondary calibration value of each frequency point in the corresponding frequency domain, archive, draw the curve and deliver it to the user for reference.

### AE SENSOR CALIBRATION CERTIFICATE



NOTE: Sensitivity dB ref 1V/m/s