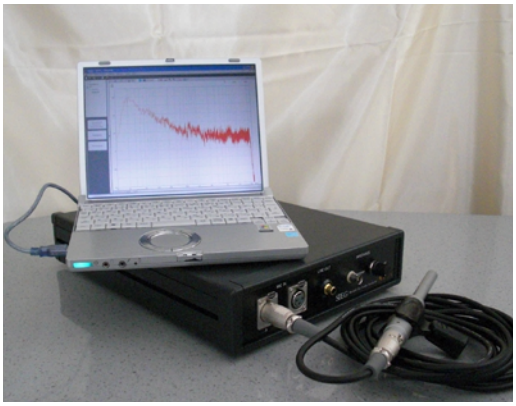
SIEG® Measurement Manual

1. Preparation

〈 Components 〉

- SIEG
- USB cable
- SIEG software CD-ROM
- AC adapter
- Impedance measurement cable
- Microphones (including a holder and a wind screen) x 2
- Microphone cables (5m long with canon plugs) x 2

〈 Other necessary equipments and components 〉



- Personal computer (Windows2000 / WindowsXP)
  *Ver. 2 is compatible with WindowsVISTA.
- RCA cable (for transmission frequency characteristics measurement)
- Audio source (pink noise etc. for FFT measurement)

〈 Installation of SIEG software 〉

→ Refer to the Installation Manual

〈 Connection and startup 〉

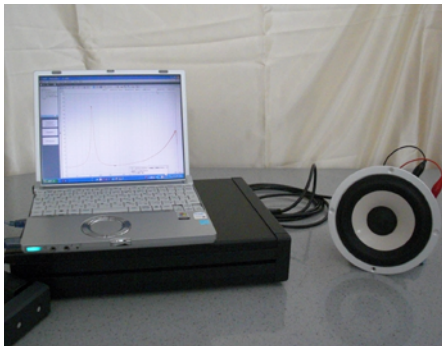
Turn on the power of the PC and connect it to SIEG with a USB cable.
Start the SIEG software.

Select US-122 (or US-122L) as a sound input/output devise from the devise setting.

2. Impedance measurement

〈 **Necessary components** 〉

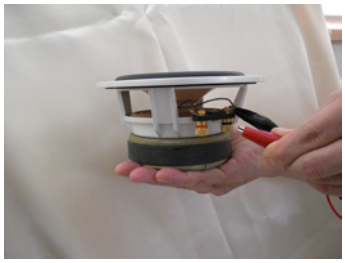
- AC adapter
- Impedance measurement cable
- USB cable



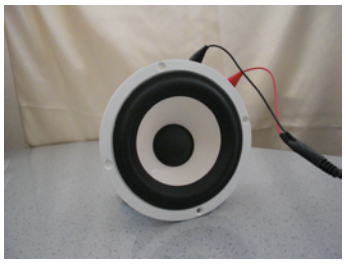
2-1 Measurement of fundamental impedance characteristic of speaker units

■ Connection

1. Connect an AC adapter and a USB cable to SIEG.
2. Connect alligator clips of the impedance measurement cable to speaker terminals. A red clip is for (+) and a black clip is for (-) of the speaker terminals.



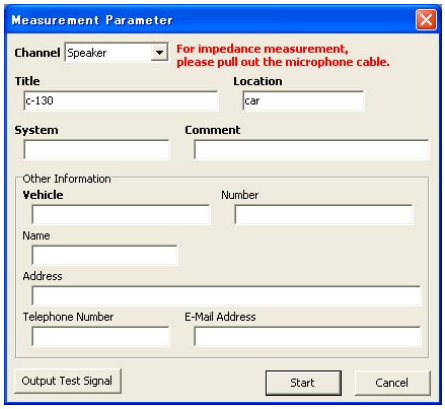
3. Caution! : Unplug the microphone cable from SIEG when measuring the impedance.
4. Place the speaker sideways on a stable table. It is possible to place the speaker upward when measuring temporary.



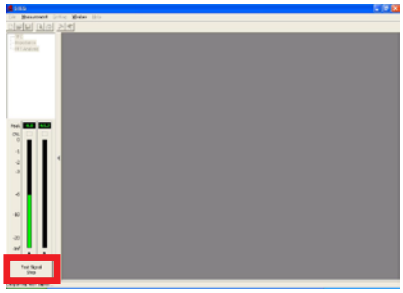
■ Measurement

1. Click on the [Impedance] button in the display area of the SIEG software.This displays a dialog box for specifying measurement parameters. Input the necessary information to the dialog box.
   - Title
   - Location
   - System
   - Comment

*All these information can be added or changed later.

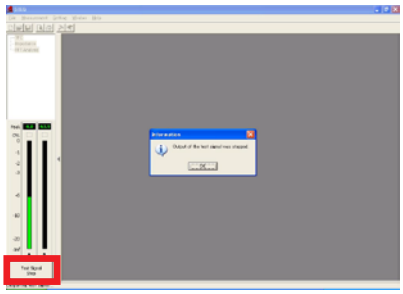


2. Click on the [Output test signal] button to output the signal.



3. During test signal output, adjust the impedance level of SIEG to set the output to an appropriate range.

*Set the level to 0 at first, and raise the level gradually while watching the level meter.



4. Click on the [Output test signal] button again to stop the signal.

〈 **Note** 〉 Appropriate output level (adjust the level lower than the shown level.)

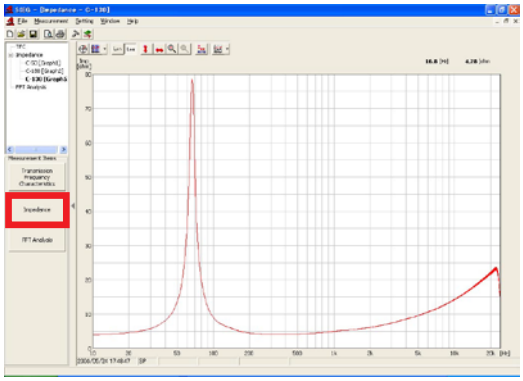
■ **TW: -10dB (-6dB is possible for BEWITH tweeters.)**

* Adjust especially TW levels carefully because the output signal is full range.

■ **MW: -6dB**

*Generally, better waveform can be obtained when the output level is set higher.

5. Click on the [Start] button to start the measurement. The measurement will stop automatically and the impedance measurement result will be displayed.



2-2 Impedance measurement inside a vehicle

■ Connection

1. Turn off the engine of the vehicle which you measure and take all speaker cables off amplifier.
2. When using passive networks, take network's output cables.
3. Connect an AC adapter and a USB cable to SIEG.
4. Connect alligator clips of the impedance measurement cable to speaker terminals.
5. A red clip is for (+) and a black clip is for (-) of the speaker terminals.

*Caution! : Unplug the microphone cable from SIEG when measuring the impedance.

■ Measurement

It is desirable that all doors are closed when measuring. Also close rear door of the hatchback type cars and the SUVs as much as possible. The measuring method is the same as measuring the fundamental characteristics of the speaker units.

〈 **Note** 〉 Appropriate output level (adjust the level lower than the shown level.)

■ TW: -10dB (-6dB is possible for BEWITH tweeters.)

* Adjust especially TW levels carefully because the output signal is full range.

■ MW: -12dB in case of using a baffle board, -6dB in case of using an enclosure.

■ SW: -6dB

3. FFT measurement

〈 Necessary components 〉

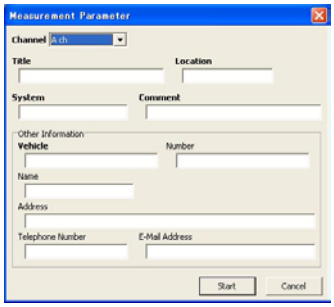
- Microphone
- Microphone holder
- Microphone cable
- Sound source (pink noise etc.)
- USB cable

Connection

1. Prepare the sound source (usually pink noise) to reproduce inside the vehicle you measure in.
2. The measurer sits in the listening point. And place SIEG and the PC nearby.
3. The AC adapter is not necessary at this time.
4. Connect the microphone cable and holder to the microphone, and connect the other end of the microphone cable to [Mic in A] terminal of the SIEG.

Measurement

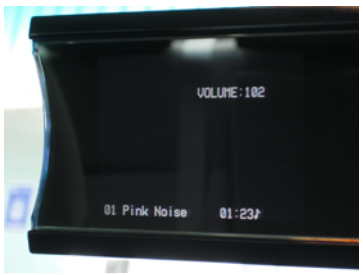
1. Click on the [FFT Analysis] button on the SIEG software.This displays a dialog box for specifying measurement parameters. Input the necessary information to the dialog box.

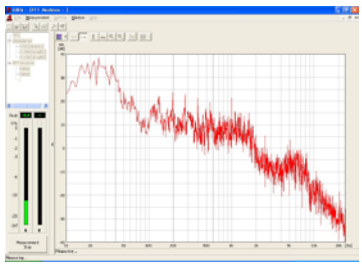


- Title
- Location
- System
- Comment

*All these information can be added or changed later.

2. Reproduce the sound source (usually pink noise). It is appropriate for the volume to be a little loud.

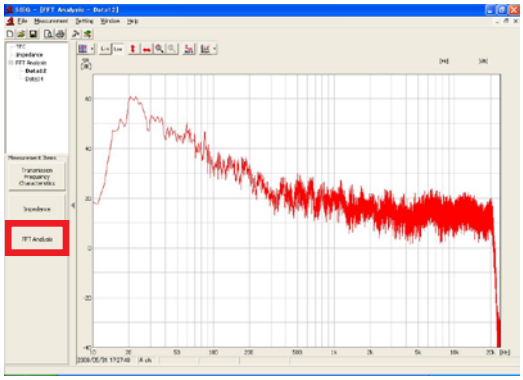




3. Hold the microphone holder by one hand so that the tip of the microphone may come near the center of your ears in the listening point. It is easy for you to determine the measurement point by pushing over the seat for about 20 cm.
*Caution! : Hold the microphone holder (not the microphone itself) to obtain correct measurement data.

*Try not to move the body and the microphone while measuring.

4. Click on the [Start] button to start the measurement. Result of the measurement will be displayed on the screen so click on the [Measurement Stop] button when the waveform becomes stable.



4. Transmission Frequency Characteristics measurement

〈 Necessary components 〉

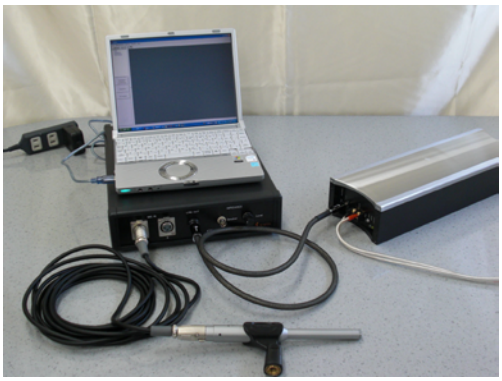
● Microphone ● Microphone holder ● Microphone cable ● RCA cable ● USB cable

■ Connection

1. Set up the speakers to reproduce the output signal of the SIEG LineOut. This signal has full range. To avoid damaging the TW, use passive network to limit the signal range.

2. Connection in case of using passive network: SIEG → amplifier → passive network → speakers.
Connection in case of using channel divider: SIEG → channel divider → amplifier → speakers.
Because Mirror Station AZ-1 and AZ-2 have time delay for operation, they cannot be connected into the measuring system. Use passive networks instead of using Mirror Station.

3. Connect RCA cable from SIEG to the amplifier or the channel divider.

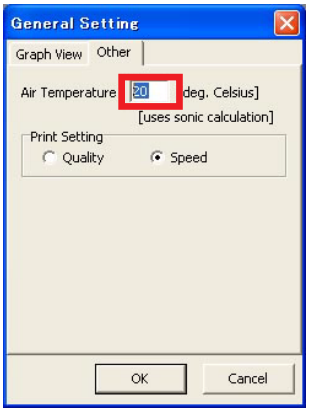


4. The measurer sits in the listening point. And place SIEG and the PC nearby.

5. The AC adapter is not necessary at this time.

6. Connect the microphone cable and holder to the microphone, and connect the other end of the microphone cable to [Mic in A] terminal of the SIEG.

7. To set air temperature, click on the [Setting] to display [General Setting] dialog box. Click on [Other] tab to set an air temperature for a sonic velocity to calculate time alignment.

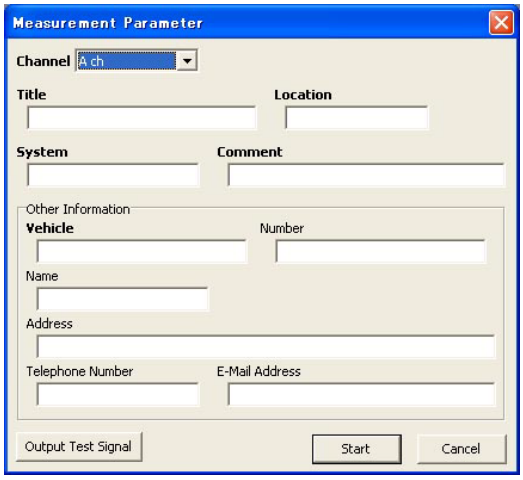


Measurement

1. Click on the [Transmission Frequency Characteristics] button on the SIEG software. This displays a dialog box for specifying measurement parameters. Input the necessary information to the dialog box.

   ・Title
   ・Location
   ・System
   ・Comment

*All these information can be added or changed later.



2. Hold the microphone holder by one hand so that the tip of the microphone may come near the center of your ears in the listening point. It is easy for you to determine the measurement point by pushing over the seat for about 20 cm.

*Caution! : Hold the microphone holder (not the microphone itself) to obtain correct measurement data.

3. Click on the [Output test signal] button to output the signal.
   During test signal output, adjust gain of the amplifier to set the output level to an appropriate range.
   Raise the level gradually from low level not to set it at high level from the beginning.
   It is appropriate for the volume to be a little loud.
   Click on the [Test Signal stop] button to stop the signal.

4. Click on the [Start] button to start the measurement.The measurement will stop automatically and the measurement result will be displayed.