

## Automatic audio tester Model OAT-709

### 1 Summary

Model OAT-709 is audio tester which can measure a speaker and the characteristic of the microphone.

Speaker measurement (20Hz to 40kHz : OAT-709) and speaker measurement (200Hz to 100kHz : OAT-709A) will be another application program.

### 2 Measurement item

#### 【Speaker measurement】

##### OAT-709 (20Hz to 40kHz)

Sensitivity, Impedance, Fo, Q measurement (Electricity Q, Mechanical Q, Synthesis Q), Frequency response [F1 (an angle of 0° ), F2 (an angle of 30° ), F3 (an angle of 60° )], Flat characteristic, Distortion characteristic (Second to tenth and total harmonic distortion)

##### OAT-709A (200Hz to 100kHz)

Sensitivity, Impedance, Fo, Frequency response [F1 (an angle of 0° ), F2 (an angle of 30° ), F3 (an angle of 60° )].

#### 【Microphone measurement】

Sensitivity, F1(0° in an axis) frequency response, F2 angle (Example : an angle of 90° ) frequency response, F3 angle (Example : an angle of 180° ) frequency response, F1-F2 frequency response, F1-F3 frequency response, F1-F2 five points of frequency sensitivity difference, F1-F3 five points of frequency sensitivity difference

### 3 Performance

#### 【Speaker measurement】

##### 1) Oscillation part

##### OAT-709 (20Hz to 40kHz)

Oscillation frequency : 20Hz to 40kHz  
(Log sweep, resolution 1024step log)  
Sweep time : 1 second to 100 seconds 0.1 seconds step setting  
Output voltage : 0.1V to 10.00V (0.001V step)  
 $\pm(2\%+0.02V)$  8Ω load  
Max power load condition : More than 2Ω Less than 12.5W

##### OAT-709 A (200Hz to 100kHz)

Oscillation frequency : 200Hz to 100kHz  
(Log sweep, resolution 1024step log)  
Sweep time : 1 second to 100 seconds 0.1 seconds step setting  
Output voltage : 0.5V to 5.000V (0.001V step)  
 $\pm(2\%+0.02V)$  8Ω load  
Max power load condition : More than 2Ω Less than 12.5W

2) **Impedance part**

**OAT-709 (20Hz to 40kHz)**

Measurement range : 1  $\Omega$  to 500  $\Omega$   
Measurement accuracy : Z = 4  $\Omega$  to 100  $\Omega$   
F = 100Hz to 10kHz  $\pm(5\%+0.1 \Omega)$   
Z = 1  $\Omega$  to 500  $\Omega$   
F = 20Hz to 20kHz  $\pm(10\%+0.2 \Omega)$

**OAT-709A(200Hz to 100kHz)**

Measurement range : 1  $\Omega$  to 25.6  $\Omega$   
Measurement accuracy : Z = 4  $\Omega$  to 10  $\Omega$   
F = 200Hz to 20kHz  $\pm(10\%+0.1 \Omega)$   
Z = 2  $\Omega$  to 25.6  $\Omega$   
F = 200Hz to 100kHz  $\pm(20\%+0.2 \Omega)$

3) **Sensitivity part**

**OAT-709 (20Hz to 40kHz)**

Frequency setting : 20Hz to 20kHz

**OAT-709A (200Hz to 100kHz)**

Frequency setting : 200Hz to 100kHz

4) **Impedance measurement part**

**OAT-709 (20Hz to 40kHz)**

Frequency setting : 20Hz to 20kHz

**OAT-709A (200Hz to 100kHz)**

Frequency setting : 200Hz to 100kHz

5) **F o part**

**OAT-709 (20Hz to 40kHz)**

Fo measurement range : 20Hz to 10kHz  
F o measurement voltage : 0.1 to 10V  
F o sweep time : 1 second to 10 seconds  
Measurement accuracy :  $\pm(2\%+1)$ Hz  
Fo = 133Hz Q = More than 2  
Sweep width  $\pm 50\%$

**OAT-709A (200Hz to 100kHz)**

Fo measurement range : 200Hz to 20kHz  
F o measurement voltage : 0.5 to 5V  
F o sweep time : 1 second to 10 seconds  
Measurement accuracy :  $\pm(2\%+10)$ Hz  
Fo = 1000Hz Q = More than 2  
Sweep width  $\pm 50\%$

## 6) Distortion meter part

### OAT-709 (20Hz to 40kHz)

Higher harmonic	: Second harmonic wave, Tenth harmonic wave and Total harmonic distortion
Sweep time	: 2 seconds
Frequency analysis range	: 40Hz to 40kHz
Measurement voltage	: 0.100V to 10.000V 1mV step
Frequency range	: 90dB SPL to 140dB SPL 10dB step

### 【Microphone measurement】

- 1) Standard speaker drive voltage : 0.1V to 10V 0.1V step
- 2) Sweep frequency range : 20Hz to 40kHz
- 3) Sweep time : 1 second to 100 seconds 0.1 seconds step
- 4) Standard microphone amp range : 90dB SPL to 140dB SPL 10dB step
- 5) Test microphone amp range : 0dBV to -50dBV 10dB step
- 6) F2, F3 frequency measurement range setting : 20Hz to 40kHz (Inside of F1 range)
- 7) Characteristic indication : Absolute value or Relative value

## 4 System composition



- Main unit
- Personal computer (OS: Windows 10 64bit)
- 1/2 inch standard condenser microphone
- 1/4 inch standard condenser microphone

Main unit dimensions / math : 420(W) x 150(H) x 350(D) mm About 10kg