5. Experimental Contents

1) Master the measurement method of hearing and hearing threshold;

2) Determine the hearing threshold curve of the human ear.

6. Experimental Procedures

1) Familiarize yourself with the functions of each key on the panel of the apparatus. Turn on the power switch (the indicator light is on), and preheat for 5 minutes.

2) Plug in the headset on the rear panel and press the "Set" key to enter the measurement interface.

3) The person to be tested puts on the headset and faces away from the examiner (doctor) and the instrument (or each person tests by themselves).

4) Select the left ear (L) or right ear (R) by the "Channel" selection, adjust the "Calibration" knob, so that the subject just hears the sound of 1000 Hz (the "Calibration" knob cannot be adjusted during the subsequent measurement process); at this time, set the indicator of the sound strength meter to 0 dB.

5) Measurement:

   a) Choose the measurement frequency at will;

   b) Measure by incremental method: adjust the volume by using the two knobs of "Coarse" and "Fine" until no sound can be heard. Starting from here, gradually increase the volume (can alternately adjust the coarse and fine adjustment). When the tested person just heard the sound, stop adjust, the sound intensity (or sound intensity level) at this time is the hearing threshold of the tested person at this frequency, and the decibel number is expressed by L_1;

c) Measure by decreasing method at the same frequency as previous method: the steps are basically the same as above, except that the volume knob is first adjusted where the sound can be heard, and then the volume is gradually reduced until the sound is just not heard. Corresponding to the sound of the same frequency, the hearing threshold can be obtained, and the decibel number is represented by L_2.

6) Make the threshold curve:

a) The relative sound intensity level L of hearing threshold at this specific frequency is $L = (L_1 + L_2) / 2$;

b) Change the frequency and repeat the above measurement steps to measure different frequencies such as 125 Hz, 250 Hz, 500 Hz, etc., so that the hearing threshold of the right or left ear to different frequency points can be obtained; Record data in the table below:

f (Hz)	125	250	500	1000	2000	4000	6000	8000	10000	12000
L_1 (dB)										
L_2 (dB)										
L (dB)										

c) Take the common logarithm of frequency as the abscissa, and the sound intensity level as the ordinate. Use the measurement data to draw Lg (f) ~ L graph, this is the hearing threshold curve.

7. Examples of Data Recording and Processing

Note: Following data are for reference purpose only, not the criteria for apparatus performance:

Following the above experimental procedures, respectively use incremental and decreasing method to measure hearing threshold at different frequencies for the left ear and right ear.
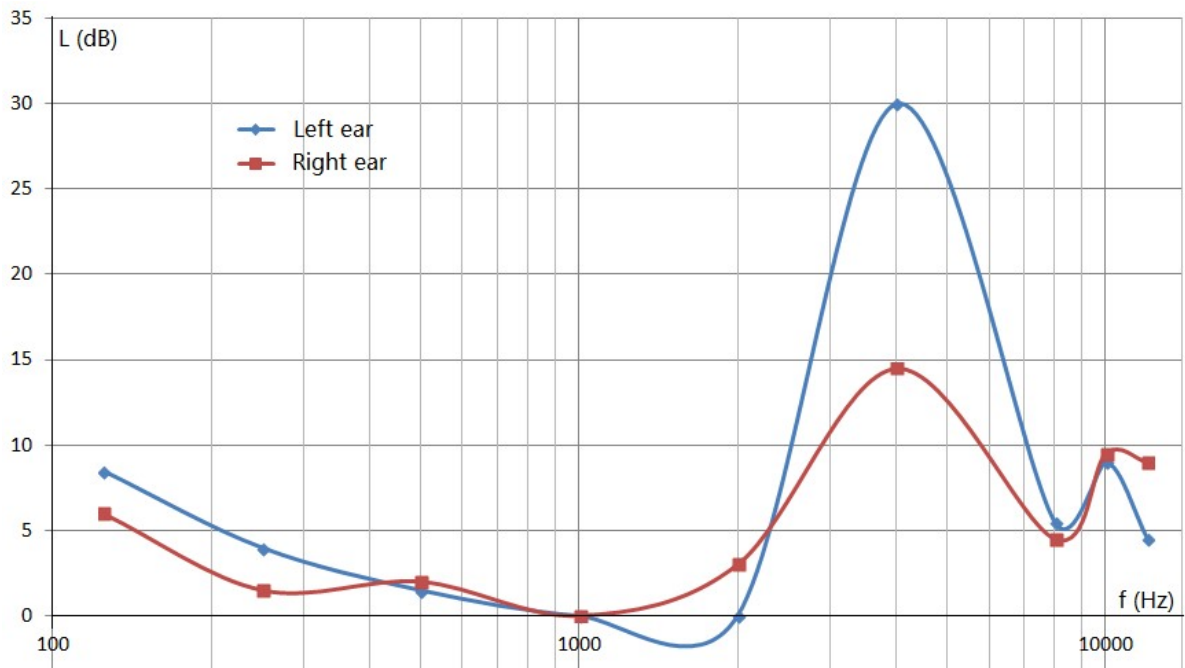
(1) Data is shown as follows:

For the left ear:

f (Hz)	125	250	500	1000	2000	4000	8000	10000	12000
L_1 (dB)	10	5	2	0	0	30	7	10	4
L_2 (dB)	7	3	1	0	0	30	4	8	5
L (dB)	8.5	4	1.5	0	0	30	5.5	9	4.5

For the right ear:

f (Hz)	125	250	500	1000	2000	4000	8000	10000	12000
L_1 (dB)	7	1	3	0	3	16	4	10	9
L_2 (dB)	5	2	1	0	3	13	5	9	9
L (dB)	6	1.5	2	0	3	14.5	4.5	9.5	9

(2) Draw the f ~ L graph:

*Experimental data shows that the subject's hearing may have some degree of damage

around 4000 Hz.