CLAIMS

We claim

1. A testing equipment of an airplane air conditioning system, comprising:

a sound receiver, and

a sound processor, wherein the sound processor processes running noise of the airplane air conditioning system sampled by the sound receiver to assess the operative condition of the system,

wherein the sound receiver samples environmental noise when the airplane air conditioning system is not running, and wherein the sound processor de-noises the running noise by using the environmental noise; and

the sound processor assesses whether the plurality of devices are in a deterioration period by analyzing changes in variation trends of waveforms and/or frequency spectrums of the running noises of the plurality of devices in the airplane air conditioning system.

2. The testing equipment according to claim 1, wherein the sound receiver is an independent microphone or a built-in microphone.

3. The testing equipment according to claim 1, wherein the sound receiver is mounted at the air outlet of the airplane air conditioning system or in the cabin.

4. The testing equipment according to claim 1, wherein the sound processor determines a change in the running noise by comparing the running noise with a standard noise of the airplane air conditioning system.

5. The testing equipment according to claim 1, wherein the sound processor assesses a failure source of the airplane air conditioning system.

6. The testing equipment according to claim 5, wherein the sound processor assesses a failure cause of the airplane air conditioning system.

7. The testing equipment according to claim 5, wherein the sound processor analyzes a waveform and/or frequency spectrum of the running noise of the airplane air conditioning

system, and extracts waveforms and/or frequency spectrums of noises corresponding to a plurality of devices in the airplane air conditioning system.

8. The testing equipment according to claim 7, wherein the sound processor determines the failure source or failure cause by a combined use of the waveforms and/or frequency spectrums of noises of the plurality of devices.

9. The testing equipment according to claim 1, wherein the sound processor analyzes changes in variation trends of waveforms and/or frequency spectrums of the running noises of the plurality of devices in the airplane air conditioning system by comparing the running noise with history noises of the airplane air conditioning system.

10. The testing equipment according to claim 1, wherein the sound processor assesses a time of failure of the plurality of devices.

11. A method of testing the airplane air conditioning system, comprising:

sampling a running noise of the airplane air conditioning system,

sampling an environmental noise when the airplane air conditioning system is not running;

denoising the running noise by using the environmental noise;

assessing an operative condition of the airplane air conditioning system; and

assessing whether the plurality of devices are in a deterioration period by analyzing changes in variation trends of waveforms and/or frequency spectrums of the running noises of the plurality of devices in the airplane air conditioning system.

12. The method according to claim 11, further comprises determining a change in the running noise by comparing the running noise with the standard noise of the airplane air conditioning system.

13. The method according to claim 11, further comprises assessing a failure source of the airplane air conditioning system.

14. The method according to claim 11, further comprises assessing a failure cause of the airplane air conditioning system.

15. The method according to claim 11, further comprises analyzing waveform and/or frequency spectrum of the running noise of the airplane air conditioning system, and extracting the waveforms and/or frequency spectrums of noises corresponding to a plurality of devices in the airplane air conditioning system.

16. The method according to claim 11, further comprises determining a failure source or failure cause by a combined use of waveforms and/or frequency spectrums of noises of a plurality of devices.

17. The method according to claim 11, wherein analyzing changes in variation trends of waveforms and/or frequency spectrums of the running noises of the plurality of devices in the airplane air conditioning system comprises analyzing changes in variation trends of waveforms and/or frequency spectrums of the running noises of the plurality of devices in the airplane air conditioning system by comparing the running noise with history noises of the airplane air conditioning system.

18. The method according to claim 11, further comprises assessing a time of failure of the plurality of devices.