

by Alan J. Pierce, EdD

**Audio-Technica's
Active Noise Cancellation Technology**

National Institute for Occupational Safety and Health "recommends removing hazardous noise from the workplace whenever possible and using hearing protectors in those situations where dangerous noise exposures have not yet been controlled or eliminated". The old fashioned way of silencing or reducing noise was to use ear plugs or special earmuffs that are filled with sound absorbing materials. Both of these devices block sound from entering your ears. When you use earbuds with ear tips that go into your ear they serve a dual purpose as they act as an earplug to reduce the amount of outside noise entering your ear and also act as a sound conduit for the soundtrack from your audio or video player.

The high tech way of blocking out undesirable noise is to electronically cancel what you don't want to hear. Active noise cancellation technology reduces background noises by creating an opposing sound wave that cancels out the background noise. To apply this concept Audio-Technica headphones have miniature microphones inside their headphones and earbuds that pickup the noise from your surroundings. The

electronic circuitry of the units then creates a sound wave that is 180° out of phase of the offending sounds. This second sound wave acts as an acoustical eraser eliminating most of the loud noise that you would hear if not wearing an active noise cancellation device. See photo 1. The audio-technica QuietPoint® ATH-ANC9 that I used to test out this technology has two microphones in each ear cup and they were a recipient of a 2013 Consumer Electronics Show (CES) design and engineering award.



Photo 1 - QuietPoint® ATH-ANC9

To see what these QuietPoint® headphones could do I tested them on a flight from New York to California. Before using them to listen to music or a video my first goal was to see just how effective they were at actively cancelling the noise of the planes jet engines. The packaging says they can "reduce environmental noise by up to 95%". With them already in place over my ears I switched the power button on and the roar of the airplane jet engines was reduced to the sound made by a stream running water. With my music playing the background noise seemed to completely disappear. Even with my own music feed I could hear announcements from the cockpit clearly and also hear what people around me were saying. For

the final airplane test I jacked them into my video player which was playing a movie with an extremely low sound track. They made it very easy for me hear what the actors were saying. In this test I was comparing their effectiveness to my Shure earbuds that don't have active noise cancellation. With the QuietPoint® headphones I was in a reasonably quiet place easily hearing what was being said and with the Shure earbuds I was in a very noisy place but still able to hear what the actors were saying.

These QuietPoint® headphones have a Blue light airplane mode, red light office mode, and a green light study mode. Each mode is designed to handle the type of background noise found in a specific environment. When I tested them at different locations in the other modes they certainly reduced the noise from my surroundings. They didn't completely cancel out my ability to hear two very annoying people having a very animated argument. They designed the QuietPoint® ATH-ANC9 with as small a footprint as possible by letting the headphones turn flat when you put them into their protective carrying case.

My overall opinion is that the QuietPoint® ATH-ANC9 performs extremely well at cancelling noises that could hurt your hearing. They will reduce but not silence a TV set or annoying people noises that might be located where you are trying to study.

I used the same testing procedures to test audio-technica QuietPoint® ATH-ANC33iS earbuds which also have active noise cancellation. They work using the same basic technology that was explained at the beginning of this review, but only have one microphone in each earbud. On the airplane they reduced the engine noise by perhaps 50 percent. When I jacked them into my music player, where I had full control of the volume, they performed as advertised. However when I jacked them into my video player which was playing the same movie that had a low sound track I couldn't hear the movie. My Shure earbuds, that don't have active noise cancellation, only barely reduced the roar of the engines but I could hear the movie over the roar of the jet engines. See photo 2.



Photo 2
QuietPoint® ATH-ANC33iS

Both of these audio-technica QuietPoints® come with a cable microphone and controller for use with some Smartphones or touch pad devices. With this controller I could switch tracks on my iPod and answer calls on my Samsung Galaxy Smartphone. I could not however answer calls on the iPhone 5 or switch music tracks on either Smartphone.

My final word is if you are looking to purchase headphones with active noise cancellation go with the audio-technica QuietPoint® ATH-ANC9. They outperform the audio-technica QuietPoint® ATH-ANC33iS in every way.

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