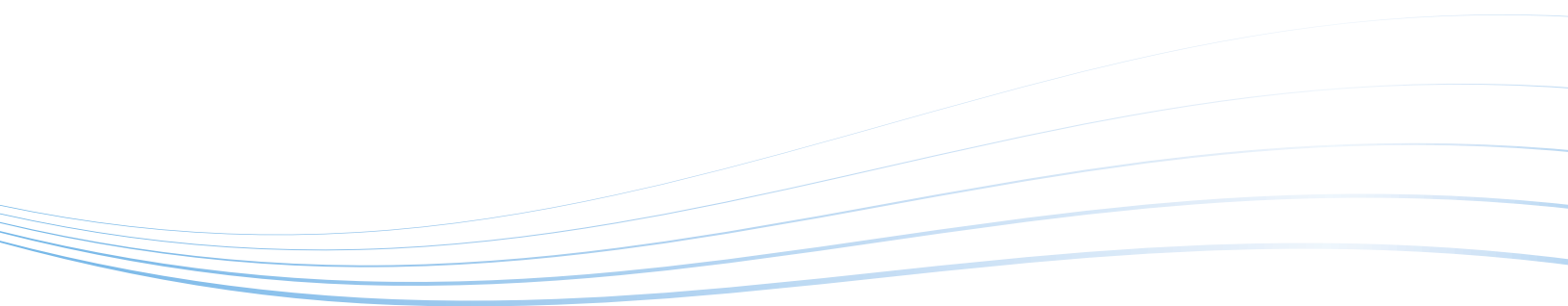




PLANTRONICS
SOUND INNOVATION™

The quest for **sound quality**

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→ ● • • → **The Quest for Sound Quality**

INTRODUCTION

“Superior sound quality” is a phrase that is often over-used in the world of telephone headset and communication technology. The problem is that while virtually every company claims to provide this optimal level of sound, few actually do. Caught in this semantic crossfire of claim-versus-reality is the call center—a place where high quality sound can be the sole difference between success and failure.

Now, with businesses placing increased pressure on call centers to provide their customers with superior and seamless interaction, the importance of working in an exceptional sound environment is greater than ever before. Call center agents need to be able to hear customers clearly so they make fewer mistakes. Customers need to feel like they are being heard. And when it comes to choosing headset technology, businesses no longer have the luxury of being able to gamble with spurious claims of sound quality. Today, they need to be sure.

Fortunately, superior sound quality is not a relative term—it is an absolute, verifiable through the science of acoustics and, more simply, through the use of the human ear. The key to being able to discern superior sound quality is training yourself to know what to listen for and what you should hear.

WHAT IS QUALITY SOUND? A QUICK ACOUSTIC BACKGROUNDER

Scientifically speaking, superior sound quality is composed of a series of elements that contribute to the concept of ideal receiver response, which is that it mimics face-to-face listening as closely as possible.

- **Speech-to-Ambient-Noise Ratio (SANR):** How much noise is getting through relative to voice.
- **Total Harmonic Distortion:** How the sound output differs from the sound input; in a system with no distortion, a pure tone input will be reproduced at the output as the same pure tone, simply raised or lowered in volume.
- **Initial Loudness:** Whether or not the beginning of a signal is too soft or too loud to be heard comfortably.
- **Frequency Response and Bandwidth:** Whether all the significant high tones and low tones of the voice are captured and reproduced.

When acoustic engineers try to provide the highest possible sound quality over the phone, they work against a set of ideal frequency response curves, which have been proven to deliver the best possible sound environment.

The “Orthotelephonic” Frequency Response Curve. When engineers decide what frequency response (the relative levels between different frequencies) a headset receiver should be designed to produce, the “orthotelephonic” curve is often the goal selected. Picture a live talker one meter distant from the ear of a live listener. Now imagine a very small microphone at the eardrum of one ear of the listener. Before sounds reach the eardrum, they are shaped by the listener’s head, ear and ear canal; this is the orthotelephonic curve.

Other Frequency Response Curves. Headsets can be engineered to generate sound with a particular frequency response curve, pre-set according to taste. They also can be engineered to transmit sounds according to frequency response curves that can be varied by the user, by introducing tone controls that allow for different “bass” and “treble” settings. As a matter of personal preference, some consumers seem to prefer receivers reflecting a frequency response that suppresses the low tones and emphasizes the higher frequency sounds, possibly because much background noise is lower frequency noise, and higher tones, in general, provide the best intelligibility.

WHAT YOU SHOULD LISTEN FOR

When trying to discern superior sound quality, it is important to keep in mind the primary aim of high-end telephone headsets and communication technology engineers: to closely mimic the experience of face-to-face speaking and listening. Anything that falls significantly short of that aim fails to meet that simple-to-understand though difficult-to-achieve standard.

There are five primary components that make up this “face-to-face” standard:

- High speech-to-noise ratio—the background noise should be as low as possible compared to the speaker’s voice.
- Absence of artifacts—both parties should have complete transparency, so there should be an absence of echoes, pops or squealing; nothing about the communication environment should remind them that they are not speaking face to face.
- Voice expansion—all background noise or “hum” should be reduced when the speaker is not speaking.
- Protection against overly loud noises—particularly when using a headset, a sudden jarring noise on the other end of the line can disrupt a conversation or cause discomfort; protecting against these intrusions ensures an intimate communication environment.
- No harmonic distortion—the output signal must match the input signal, without additional frequency elements changing the character and clarity of the sound.

WHY QUALITY SOUND IS IMPORTANT TO THE CALL CENTER

This discussion of superior sound quality wouldn’t be so critical if it were not for the many challenges that are facing call centers today. Businesses are putting call centers on center stage, at the critical junction between customer satisfaction and the bottom line. And headsets, and the superior sound quality call center agents need to provide for the best possible interaction, are the primary tools in this effort.

Poor customer interaction can translate into multiple customer inquiries, or errors which can significantly increase processing costs and, most importantly, cause customers to abandon the relationship altogether. And the relationship between customers' satisfaction with the call center experience and their willingness to spend more money with a particular business is growing. According to a recent Jupiter report, nearly half of all customers surveyed said the speed, thoroughness and quality of customer service interaction would guide their future purchases. Naturally, this is a daunting prospect for businesses across all disciplines.

The financial services sector is paying much closer attention to the role of call centers, realizing that these resources are the prime point of contact for most of their customers. In the wake of the Enron, ImClone and countless other investment scandals, more investors want to hear a human voice on the other end of the line and are eschewing the online component. Thus, the call center interaction must be effortless, with call abandonment rates as close to non-existent as possible.

Another sector where increased scrutiny is being directed at call center efficiency is the managed health care industry, where the National Committee for Quality Assurance has substantially expanded the scope of the tool that defines how health plans evaluate themselves in terms of customer service. More scrutiny will be placed on a number of managed health care call center standards that have been lacking in recent years, including call abandonment and "call answer timeliness", the percentages of calls answered by a live voice within 30 seconds.

Ultimately, superior sound quality is indispensable in trying to provide businesses with the call center service they now require in today's economy. Greater clarity during a call causes less confusion with call center agents and their customers, which leads to fewer repeats, less call abandonment and lower costs of issue resolution. Also, face-to-face standard headset interaction that enables call center agents to speak normally without having to raise their voices, eases fatigue and increases their efficacy. And, as the ease of interaction increases, agents are able to solve issues more quickly and efficiently and are therefore able to handle more calls, increasing call answer timeliness.

THE PLANTRONICS DIFFERENCE: WHAT MAKES PLANTRONICS SOUND BETTER

While the human ear is undoubtedly the best judge for gauging sound quality, there are other hallmarks of sound superiority, beginning with a track record of delivering ground-breaking superior sound quality technology to the call center. For Plantronics, this began with its Sound Guard®Plus™ technology, which ensures that loud tones are quickly reduced and that any transient pops are instantly capped. Most importantly, SoundGuard Plus ensures that the normal, human voice remains natural and unchanged, delivering face-to-face clarity of communication to the call center environment.

The Plantronics Call Clarity™ system uses electronic signal processing to enhance transmission and reception through innovative noise reduction techniques that result in the clearest possible calls. With Call Clarity, the headset wearer benefits from less phone line and room noise. And for both the wearer and the listener, the Call Clarity system ensures less confusion as to who is speaking.

Another unmistakable indicator of sound quality is a company's commitment to, and a legacy of, providing top quality sound technology. With Plantronics, this pedigree begins in 1962 when it introduced the first lightweight communications headset. A Plantronics headset was even there for Neil Armstrong's historic, "One small step for man, one giant step for mankind", transmission from the moon in 1969. Today, this commitment has translated into its role as the world's leading designer, manufacturer and marketer of lightweight communications headset products.

By having made a greater investment in state-of-the-art acoustic equipment than any other manufacturer, Plantronics has worked rigorously to ensure that it can provide superior sound quality, and thus continue to provide call centers with the ease of interaction they need. Its engineers and executives have maintained membership and influence on every major international acoustics board, and continue to work to expand their pursuit of sound excellence. Plantronics engineers have unparalleled expertise in analytical and psycho-acoustics as well as an ever-deepening expertise in digital signal processing. And the entire Plantronics team maintains the highest level of core technology research in the headset industry.

SUMMARY: HOW TO CHOOSE THE HEADSET THAT PROVIDES SUPERIOR SOUND QUALITY

As call centers work to provide an ideal communication environment for their agents and customers, there are a number of questions that need to be answered before choosing a headset that provides truly superior sound quality.

- Does this headset ensure that the background noise is as low as possible compared to the speaker?
- Does it enable both parties to communicate with complete transparency?
- Does it reduce background noise when the speaker is not speaking?
- Does it offer protection against sudden, overly loud noises?
- Does it ensure that the output signal matches the input signal?
- Does it closely imitate the experience of face-to-face speaking and listening?
- And lastly, is this headset made by a company that has demonstrated a commitment to providing top quality sound technology?

Only by choosing a headset that provides the highest possible sound quality, can businesses increase the overall effectiveness of their call centers, ensuring higher levels of customer satisfaction and helping to grow their bottom line.

Sound innovation for missions to the moon. And for everyday life on this planet, too.

In 1969, a Plantronics headset carried the historic first words from the moon: "That's one small step for man, one giant leap for mankind." Today, we're the headset of choice in mission-critical applications such as air traffic control and 911 dispatch. This history of proven sound innovation is the basis for every product we build—whether it's for work, for home or on the go.

