

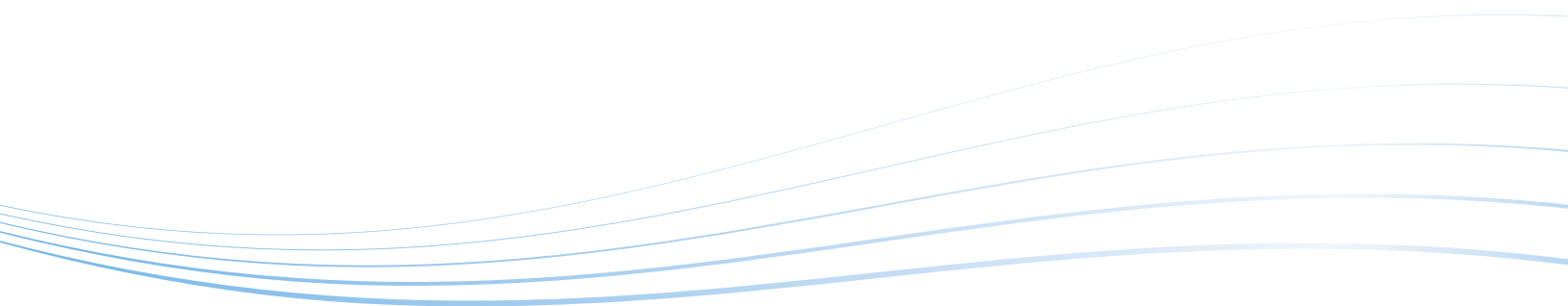


PLANTRONICS
SOUND INNOVATION™

Wireless Phone Systems for Your Organization

An Evaluation of the Plantronics
CS50 Wireless Headset System

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→ ● • • → **An Evaluation of the Plantronics
CS50 Wireless Headset System**

OVERVIEW

Decision makers in the enterprise are increasingly faced with more choices regarding their phone systems and associated equipment. IT professionals must make critical decisions about their company's equipment, yet have less time to evaluate the various options. The purpose of this white paper is to provide specific information regarding wireless headsets in order to ensure the purchase of the equipment that best fits the needs of your organization.

Wireless headset systems are a relatively new phenomenon, gaining popularity in the workplace over the past five years. As an industry leader, Plantronics has helped lead this charge in creating a hands-free solution with enhanced mobility. Wireless headsets allow business professionals to roam around their offices, down the hall to pick up photocopies or to conference rooms to have private conversations. Wireless conversations have greatly improved worker productivity.

The Plantronics CS50 wireless headset system is one of the most refined technologies in the wireless arena. The product consists of two components: a base unit and a wireless headset that communicate with one another via a secure radio signal. The base unit connects to a standard office phone, and has an optional handset lifter to allow users to be notified and pick up calls remotely. The CS50 headset may only pair with its intended base. The system was designed to provide maximum roaming range and a high level of security.

PLANTRONICS HISTORY

The CS50 wireless headset system is the end result of a long history of detailed research and development. As the premier manufacturer in the industry, Plantronics introduced its first office headset more than 40 years ago. Since then, Plantronics headsets have been used for a variety of business and special use applications. For example, Neil Armstrong's historic "One small step for man" speech was transmitted through a Plantronics headset. Plantronics also provides a number of customized versions designed for mission critical applications, such as headsets for air traffic controllers and 911 operators.

Extensive customer surveys and research culminated in the creation of the CS50. By examining usage patterns and user needs over the past 20 years, Plantronics has developed one of the most sophisticated wireless headset products available today.

A RADIO-BASED SYSTEM

The CS50 operates in the 902 to 928MHz radio band. It was based on the European DECT standard and then modified to comply with North American requirements. The product is certified according to FCC regulations in the U.S. and the communications regulations in Canada.

The CS50 uses a low-power transmitter that averages 1.7mW, a fraction of the transmit signal level used by most mobile phones. This differentiation in transmit levels allows for electro-magnetic compatibility with the majority of other devices. With the exception of EKG, EEG and a few other types of equipment, the CS50 can be used in the immediate vicinity of almost any device. There is no signal interference when used in the proximity of mobile phones, unless the devices are placed just a few inches apart.

AN ORGANIZATIONAL ASSET

Based on customer survey data, CS50 users in an office environment experience a high level of satisfaction with the product. 85% of respondents surveyed reported using their wireless headset more than 75% of the time they spend on the phone. 55% reported using their CS50 almost exclusively. The data shows the top reasons for using the CS50 as follows:

- **Hands-free roaming** 90% of respondents
- **Comfort** 86% of respondents
- **Free hands for typing** 86% of respondents
- **Ergonomic advantages** 71% of respondents

The small and medium-sized businesses participating in the survey viewed the CS50 overall as an important productivity tool. The productivity advantages can easily translate to the enterprise as well.

THE CS50 IN THE WORKPLACE

To provide an illustration of how the CS50 wireless headset system can be implemented in an office environment, more detail on the usage habits of two types of workers is outlined below.

Administrative Assistant One example of a CS50 user is an administrative assistant in a satellite office for one of the major life insurance companies. Her responsibilities include answering calls for two agents, setting up appointments, making photocopies and working on service agreements. She may spend four to five hours a day of actual talk time on the phone. Prior to using the CS50, she did not use a headset—she simply answered her corded office phone.

Since using the CS50, this administrative assistant has reported noticeable productivity gains. She claims that the biggest advantage is to be able to walk around and accomplish her work without missing calls. She is free to roam the entire office—from the copy machine to the lobby—and is still able to answer calls directly from the CS50. In fact, she only removes her headset when going to lunch.

Help Desk Support Another example of an actual user of the CS50 can be demonstrated at the help desk of a large corporation. He may spend four to six hours a day answering calls from employees who require assistance with their computers or phone equipment. He also spends a fair amount of time visiting internal clients at their desks, either in cubicles or offices. The help desk support person is entirely dependent on multi-tasking—he may be answering the phone while working on a PC and strategizing the solution to another technical issue. Needing

to navigate around a cluttered desk and piles of equipment in a crowded office, this user finds the CS50's wireless capabilities particularly valuable. On internal client visits, the CS50 can be worn while climbing under desks to inspect wiring. The range of up to 300 feet from the base unit is also appealing to this user—he need not miss inbound calls when away from his desk.

There are a number of other situations where he finds the CS50 useful. For example, he can wear his CS50 while engaging with an internal client on the phone and at the same time he can walk to the next room to bounce the server. He spends much of his time on remote desktop to fix users' PC problems, so having a hands-free and wireless solution is a must. The enhanced overall productivity of the help desk results in better satisfaction of all users in the organization, and thereby reduces down-time due to technical issues.

PRODUCT ANALYSIS

As a decision maker in the purchase of new equipment for an organization, it is helpful to understand the inner workings of a new piece of hardware that may be implemented in various departments. This step-by-step explanation of the CS50's components is intended to address potential support issues as well as illustrate the features of the product that will appeal to its intended target.



Interchangeable, reversible earloops included for a perfect fit on either ear.

Headset features:

- Noise-canceling microphone
- Dynamic speaker
- Call Answer/End button
- Online Indicator light
- Volume adjustment
- Mute switch

Base features:

- Volume adjustments (listen and talk)
- Power indicator light
- Online indicator light
- Charging indicator light
- IntelliStand™ battery charger



IntelliStand™ charging cradle

Power, Online and Charge indicator lights

Telephone Configuration dial

Volume and Mute control

Call Answer/End control

Online Indicator light

Noise-canceling microphone

HEADSET FEATURES:

Noise-Canceling Microphone and Dynamic Speaker Blocks out excess background noise so that call recipients experience optimum sound quality.

Call Answer Button Used to pick up and end calls remotely when user is away from unit base in conjunction with the HL10 Handset Lifter.

Online Indicator Green light illuminates when headset is in use.

Volume Adjustment Changes listen volume for CS50 user.

Mute Switch User can mute speech transmissions directly from the headset.

BASE FEATURES:

Volume Adjustment (Listen) Larger listen adjustment on back of base than on headset control

Volume Adjustment (Talk) Minor adjustments made with switch on the back of the base. Larger adjustments made with the switch on the underside of the base.

Power Indicator (Red) Shows that unit is plugged in and connected when lit.

Online Indicator (Green) Green light illuminates when headset is in use.

Charging Indicator (Amber) Flashes while headset is charging. Once completely charged, this light will stay on without flashing.

Battery Uses a single Lithium-polymer cell, which generally lasts for the life of the unit. Battery life is maximized by docking the headset on the base when not in use.

Telephone Configuration Dial A four-position matrix switch used to maximize compatibility with most desk phones. Provides four handset jack wiring configurations.

CS50 TECHNICAL SPECIFICATIONS:

Frequency

Frequency—the number of times that wave cycle occurs each second—is fundamental to all wireless technology. Frequency affects the range of the wireless device, talk time without recharging, energy efficiency and user density.

The vast majority of wireless products use transmit frequency bands at 900MHz (0.9GHz), 2.4GHz, or 5.8GHz. 900MHz devices generally provide better range and penetration of obstacles such as walls. 2.4GHz and 5.8GHz devices generally offer more channels allowing a higher density. 802.11b (WiFi), the standard for wireless Ethernet, and Bluetooth both operate at 2.4GHz, with widespread use worldwide; 802.11a operates at 5.8GHz.

The CS50 was specifically designed to use the 900MHz frequency in order to maximize voice and sound clarity. In any given environment, too many wireless devices using the same frequency can cause signal interference. With the proliferation of 2.4GHz devices in products such as laptops, mobile phone headsets and networking equipment, the addition of another 2.4GHz device can increase the risk of interference. Plantronics chose the 900MHz frequency for the CS50 with the knowledge that 2.4GHz has become a business standard. On the rare occasion it is used in an environment with other 900MHz products, users of the CS50 can experience

minor interference. This is manifested in audio interruption, buzzing or shortened roaming range. The problem can be diagnosed by identifying the offending device and positioning the CS50 base unit away from it. Interference will only occur with other 900MHz devices—testing has found the CS50 to be completely compatible with Bluetooth products, most LANs, and 802.11 systems.

USER DENSITY

User density is defined as the number of wireless devices that can be used in a given environment without interference. As mentioned in the frequency discussion above, many businesses are using a greater number of 2.4GHz devices including laptops and PDAs using 802.11. Too many devices using the same frequency will eventually degrade performance, causing greater interference such as static, signal interruption and poor sound quality. Thus the fact that the CS50 operates at 900MHz proves to be an asset for higher density in the majority of business situations.

When purchasing multiple CS50s for use in a single organization, it is important to consider the capacity to handle all these devices in a particular location. The CS50 has been proven to be effective in high-density situations. It senses the presence of other CS50s in the area and compensates by shortening the talk range from the base. The greater the number of users, the shorter the range. This preserves the sound quality of the conversation.

Testing has shown that with 50 or more CS50 users within eyesight in one environment talking on their phones at the same time, these users may be restricted to their offices. Since this is seldom the case, the talk range away from the unit base is usually much greater. It is advisable to avoid using other 902 to 928MHz devices in the same environment in order to prevent further interference.

Plantronics offers a money back guarantee to any customers who are dissatisfied with the product due to user density issues. Current customers have been pleased with its performance in high-density environments. No other wireless headset manufacturer can make a similar claim—Plantronics ensures that no cross talk will occur regardless of the number of CS50s in use.

SECURE AND PRIVATE CONVERSATIONS

Another potential by-product of high user density is eavesdropping into others' conversations. Plantronics is acutely aware of security issues and alleviates this problem from occurring with the CS50 in a number of ways. Similar to Bluetooth devices, the CS50 headset pairs with its base. Each headset and base is assigned a unique identity, and pairing can only occur when the headset has the identity that the base is expecting. A base can be paired with only one headset at a time. Users may change the headset that is paired with a base, but the prior pairing will be lost.

Digital coding and encryption (64-bit DECT), and user authentication are used to prevent others from eavesdropping on conversations. If someone does try to listen in on a conversation, he/she will merely hear a buzzing sound. The DECT standard is internationally recognized and confirmed as a secure method of voice transmission.

The CS50 also uses fixed-rate adaptive frequency hopping when the base and the remote are in range but audio is not enabled. This was done to ensure that the base and remote are compensating for changes in the radio signal spectrum due to other users and the presence of interferers, and thus to improve the reliability of the link, but it has the effect of adding a layer of security. The hop sequence is random on the basis of the physical environment. The CS50 also uses aperiodic adaptive frequency hopping when an audio link is enabled for the same reason. The system is aperiodic because in this mode, rather than changing channels at a fixed interval of time, the system hops channels whenever there is another user sharing the same channel and producing interference. In an environment with many users, this adds a layer of security because users change channels from time to time, rather than staying in a fixed channel. This adaptive approach offers improved security relative to other systems which use a single, common and fixed hop sequence for frequency hopping.

A WIN FOR THE COMPANY

Choosing and implementing the CS50 does not benefit just the end user, it also benefits the entire organization. Whether or not employees are using headsets as part of their daily office routine, they cannot ignore the abundance of wireless tools in today's environment. Wireless networking is already very common, as is the use of mobile phones. The next step in wireless adoption is in telecommunications equipment and use of the CS50 allows a company to be on the cutting edge of this important technology.

Low Maintenance From an IT perspective, the CS50 has minimal maintenance requirements. Once the unit is properly installed, CS50 users require very little ongoing support. According to a recent user survey, 75% of respondents reported that they are completely or very satisfied with the product. 84% of respondents claimed that they are extremely satisfied or very likely to recommend the CS50 to others. High customer satisfaction ensures that IT resources can be devoted to other areas that need attention.

Exceptional Customer Service For the uncommon occasions that technical support is required for the CS50, companies can rest assured that Plantronics will promptly address any concerns. Plantronics prides itself on a long history of putting customers first and offers a money-back guarantee if products do not meet customer requirements. Each product is backed by our full-service PlantroCare™ program that offers a one year warranty on all commercial products. Our service team is committed to quick resolution of any ordering, warranty, technical or training questions, and phone support is available 24 hours a day from 5:00 PM Sunday to 5:00 PM Friday. Quality is our top priority at Plantronics, and outstanding service is what earns us consistently high marks in customer satisfaction.

A WIN FOR USERS

The CS50 provides advantages for all users. Non-headset users will rave about its hands-free convenience and corded headset users will praise its mobility. In addition to contributing to increased productivity in the workplace, the CS50 offers ergonomic benefits, leading to reduced muscle tension and fatigue. Comfort is also a big factor in its adoption—users can choose the size of earloop they require and decide whether an over-the-head or an over-the-ear style suits them best.

Mobility The ability to multi-task is enhanced by talk range of the headset from the base. In the best case scenario, where there are minimal units in use and few obstacles, a CS50 user

can roam up to 300 feet away from its base. As the user approaches the outer edge of the range, the headset volume diminishes in order to preserve sound quality. In typical situations with several users and walls or other obstacles, talk range is generally around 150 feet. For the majority of the time, wireless roaming occurs only within a few feet of the base, within an office or walking down a hallway—150 to 300 feet is more than ample distance for the average user.

Extended Talk Time Users can also experience the convenience of long periods of talk time without recharging the CS50 headset. Tests have shown the battery to last up to eight hours of talk time on a full charge. When the unit is in standby mode, the battery will last up to 30 hours. The battery will fully recharge in three hours when docked in the base unit. The battery is designed to last for the life of the product and battery life is not diminished by leaving the headset docked when not in use.

SUMMARY

The CS50 offers wireless convenience and increased productivity in a small or large office setting. Ease-of-use and hands-free roaming are common reasons that workers choose the product. IT personnel will appreciate the advantages of the security it provides as well as its ability to maximize user density. The CS50 has been carefully crafted to optimize the user experience as well as the implementation experience. Plantronics has leveraged its experience as the leading provider of headsets to create a wireless solution that further reinforces its reputation for quality.

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.

