

# Why Tempest Wireless Intercom?

**Objective:** This document is a guide for understanding Tempest Wireless Intercom.

## Questions:

- Why was Tempest Wireless developed?
- Is Tempest Wireless different than the intercom system I am using now?
- Why are digital communications important?
- Is Tempest Wireless compatible with my current wired intercom system?
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- Understanding Federal Communications Commission (FCC) changes in the available radio frequencies
- Is Tempest 2.4GHz Wireless a Wi-Fi device?
- My current wireless system is working fine. Should I be concerned?
- What are some of the unique features of Tempest Wireless?
- Is Tempest Wireless the answer to all of my wireless communication needs?

## Why was Tempest Wireless developed?

Tempest Wireless was developed by CoachComm, LLC., the leading supplier of sports intercom communications for 1A and 1AA football, and for thousands of college and high school football teams. In the past, the wireless portion of these intercom systems was based on traditional, 40-year-old commercially available UHF (Ultra High Frequency) wireless radio technology. While these products were considered mature and reliable from a user perspective, there were a number of factors that drove the development of Tempest.

Traditional UHF products are limited in features, can require Federal Communications Commission (FCC) licensing, need frequent repairs and maintenance, and can suffer from interference from other UHF systems. One common solution to the interference issue is to perform complicated frequency coordination for all wireless systems at a given venue. Because of the need to share the UHF radio spectrum with other users, frequency coordination often requires a reduction in the available useable frequencies (channels) for many users during a given event or show.

In addition, several years ago, the FCC made public its plan to proceed with the reallocation of the UHF TV frequency spectrum to make way for Digital TV (DTV). This change also had a dramatic effect on the part of the UHF used by wireless intercom and other UHF wireless devices such as talent microphones. While the useable frequencies available for intercom and other UHF wireless products were not completely eliminated, these changes reduced the frequencies available for these products and will likely create further crowding of the airwaves. As the FCC continues to sell off parts of the spectrum, this will only become a greater challenge to analog UHF users. It was clear that a new technology was needed to meet the changing wireless landscape and support the growing need for quality, reliable, and more modern wireless intercom systems. It was this need that drove the development of Tempest Wireless.

## Is Tempest Wireless different than the intercom system I am using now?

In many ways, Tempest Wireless works like the intercom systems that many people are using today. In some ways, it works more like a wired intercom system than a wireless intercom system and includes wired intercom features such as wired call signals and remote microphone kill. In other ways, it is very different and offers new features that have not been available on any intercom system before.

One of the biggest innovations incorporated in Tempest Wireless intercom systems is an all digital radio. A significant feature of the Tempest Wireless 2.4GHz and Tempest Wireless 900MHz (available in North America only) is that no end user license is needed for operation. Tempest Wireless never needs frequency coordination and does not suffer from the interference that analog radio signals suffer from regularly.

In addition, the Tempest Wireless system allows for many more simultaneous users than ever possible in UHF systems. Tempest Wireless also requires virtually no user Radio Frequency (RF) knowledge or intervention, making setup and operation simple and fast. Tempest 2.4GHz Seamless Roaming is a revolutionary technology that also allows users to move effortlessly between Tempest systems in different locations. Regardless of RF obstacles, large areas can now be served as a single system, allowing users the freedom to have communication when and where they need it.

## **Why are digital communications important?**

Digital electronics have transformed the world. From the iPod, to CD's, DVD's, DTV, and web-based streaming technologies, we have seen the many features and benefits that these new devices can bring. Tempest Wireless is based on the latest advances in digital radio technologies. Tempest is not just a revamping of old technologies in a new package; it is a rethinking of what a wireless intercom system can and should be. Tempest Wireless was designed from the ground up as an all digital, fully featured, adaptable wireless intercom system. Tempest Wireless offers many new features, functions, and unparalleled ease of use. It truly is the next generation of wireless intercom.

## **Is Tempest Wireless compatible with my current wired intercom system?**

Tempest Wireless is designed for full compatibility with all major 2-wire and 4-wire intercom systems. In fact, Tempest Wireless offers more built-in wired interface options than any other wireless intercom system on the market today.

## **Is Tempest Wireless compatible with my current wireless intercom system?**

You can use Tempest Wireless as an add-on to expand your current intercom system or as a replacement for your older UHF wireless intercom. Tempest Wireless does not connect directly to the wireless portion of your existing wireless intercom. If your wireless intercom is currently connected to a 2-wire or 4-wire wired system, then the Tempest Wireless will connect quickly and easily to your wired system and appear just like an additional wired intercom user to the existing system.

## **Understanding FCC changes in the available radio frequencies**

The FCC rules for the requirement of 2.4GHz and 900MHz Industrial Scientific and Medical (ISM) radio band transmission, as well as information on the changes in the UHF spectrum, are fully available on the FCC web site as well as many other sites. As you might imagine, these documents are technologically complicated and require significant knowledge to understand. Simply put, Tempest Wireless conforms to the FCC rules for operation of devices in these ISM frequency bands. By definition, these devices must also work well with other devices operating in the same band. By design, they must have mechanisms to overcome conflicts with other devices in order to operate properly. Tempest Wireless does exactly that.

Tempest Wireless' patented radio schemes allow users to concentrate on their jobs without worrying about interference or reduced usability due to frequency crowding. Another important consideration for many users is by moving intercom communications to Tempest Wireless products, they can help reduce current and future UHF crowding issues. An important additional benefit of moving to Tempest Wireless is that by moving the intercom out of the UHF band, you can have additional frequencies available for wireless microphones, in-ear monitoring, Interruptible Fold Back (IFB), and other wireless devices.

## **Is Tempest 2.4GHz Wireless a Wi-Fi device?**

Tempest 2.4GHz Wireless is not a Wi-Fi device and does not suffer any noticeable interference from Wi-Fi devices. Generally, Wi-Fi devices are configured to use only one specific area of this frequency and remain in that single area (called a Wi-Fi channel). Tempest Wireless is not compatible with Wi-Fi switches, routers, and other devices, although Tempest 2.4GHz Wireless and Wi-Fi devices do share the same RF spectrum.

Tempest Wireless is very different than that kind of a system. Tempest Wireless uses an advanced transmission type called Frequency Hopping Spread Spectrum (FHSS). Two hundred times each second, the entire Tempest Wireless system changes the frequency it is transmitting on. This very fast change of frequency means that, in most cases, Tempest does not have a noticeable effect on Wi-Fi systems.

Tempest Wireless also uses special patented frequency hopping patterns to determine where to hop to next. These automatic hopping patterns manage multiple Tempest systems for large installations with many users and many bases. Tempest 2.4GHz Wireless systems also incorporate our exclusive 2Tx dual transmission system. This means every data packet is transmitted two times to ensure the best possible signal for your voice communication. Even with many Wi-Fi channels active in a given venue, Tempest Wireless has been proven to work very well. These are just some of the reasons that Tempest Wireless provides a robust wireless intercom experience.

## **My current wireless system is working fine. Should I be concerned?**

The changes in the UHF frequencies may be affecting you now, or you may be operating just fine and see no changes in your UHF or VHF communications. If you are not currently experiencing problems, you may choose to continue to use your current system as long as you wish, provided they comply with the new FCC frequency changes and requirements. You will need to check and confirm that your current system complies with the current FCC regulations. However, there are many reasons to consider upgrading to Tempest Wireless now, including:

- You need worldwide, license-free operation
- You need Seamless Roaming capabilities for a large coverage area
- Your UHF system is now in an unapproved band
- You are in need of more frequency space (spectrum for other UHF devices)
- You spend too much time and money doing frequency coordination in the UHF band
- You are plagued by occasional unexplained radio quality issues
- Your old wireless system requires constant repairs
- You want longer battery life
- You want lower maintenance costs
- You want features you have on the wired system; features not available in UHF
- You want greater expandability
- You want more users per base
- You want more total users
- You need better audio quality in noisy environments
- You need better portability

## **What are some of the unique features of Tempest Wireless?**

Tempest Wireless offers numerous technological advances, including:

- All-digital communications
- 2.4GHz worldwide operation (also available in 900MHz for use in North America only)
- 2.4GHz Seamless Roaming
- No end user license required
- Unparalleled ease of set up and use
- 2 or 4-channel systems available
- 2.4GHz systems are expandable up to 55 Normal Mode or unlimited Shared Mode users
- 900MHz systems are expandable up to 15-25 Normal Mode and unlimited Shared Mode, depending on environment
- 2xTx Dual Data Transmission (2.4GHz only)
- BaseStation synchronization for optimum RF performance with multiple systems
- AC and DC multi-voltage powered base
- Selectable multiple 2-wire interfaces
- Easy to use system menus
- Full-function front panel headset position
- Full system status display on BaseStation for Normal Mode BeltStations
- Selectable Remote Mic Kill
- Optional Remote Transceiver up to 1,500 ft (457.2 m) or 7,500 ft (2286 m) with line extenders using CAT-5 wiring
- Full 2-wire call signal interface with audible and vibrating call signal

- Auto-Null for 2-wire interfaces
- Echo Cancellation (ECAN) on 2-wire and 4-wire interfaces
- Stage Announce function with available relay
- User controllable program input
- Included T-Desk software for real-time system configuration and monitoring
- Aux-Out for all four intercom channels with mixer
- Full Duplex, Dual Listen, and Dual Talk BeltStations
- Full status back-lit LCD on BeltStations
- Multiple remote GPO relay closures with selectable trigger controls from BeltStations
- Highest dynamic range of any wireless intercom, allowing use in high noise environments
- Weather resistant BeltStation design
- Automatic selection of Dynamic or Condenser type headsets
- Li-polymer battery included
- Up to 9 hours of talk time
- AA battery operation (4 hours) with no battery sled or adapter required
- Low battery warning options

## **Is Tempest Wireless the answer to all of my wireless communication needs?**

Tempest Wireless is a radio transmission device. Like all radio transmission devices, the environment will play a large role in performance. Frequently, we have seen RF performance equal to or better than many existing UHF and VHF systems. While no product is perfect for every application or every installation, we invite you to take Tempest Wireless for a test drive. We believe you will find Tempest Wireless Intercom to be a great solution for your wireless intercom needs.

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