



## Wireless Technology Questions for the Fire and Rescue Industry

### **Bluetooth vs. Firecom Wireless Technology**

Bluetooth protocol operates in the license-free ISM band at 2.4-2.4835 GHz. The industrial, scientific and medical (ISM) radio bands were originally reserved internationally for the use of RF electromagnetic fields for industrial, scientific and medical purposes other than communications. Because communication devices using the ISM bands must tolerate any interference from ISM equipment, these bands are typically given over to uses intended for unlicensed operation, since unlicensed operation typically needs to be tolerant of interference from other devices.

The **Firecom Wireless Solution** is a high capacity wireless, mass market technology available in most countries of the world. Firecom has a protected spectrum (USA 1.9GHz) and unique, instant, dynamic channel selection processes that provides the coexistence of high quality real time communication (speech, streaming etc.). The Firecom system has a protected, encrypted spectrum, where as Bluetooth has to compete for bandwidth, thus producing interference and communication drop.

### **How mature is the use of wireless technology in the Fire and Rescue industry?**

Wireless technology has been utilized for years, being used most notably in the cell phone industry. Although used in other industries, wireless technology has not been applied to the fire and rescue industries until Firecom introduced their headsets in 2008. Our technology allows the first responder to be virtually un-tethered, giving the engineer and other crewmember's mobility around the truck.

Open license technologies (Bluetooth) are the most commonly used technologies in the wireless industry; it is frequently not appropriate or reliable enough for the fire and rescue industry. Firecom has headset technology that operates on a dedicated interference free band that utilizes a recognized protocol standard.

### **What is the cost difference between wired and wireless communication?**

With a new installation, the cost difference between a wireless and a wired system (for a one driver/one engineer configuration) is approximately \$250. It is important to remember that wireless systems have significant savings over wired system in cable and installation costs; the net cost differential is much less than \$250 .

### **Do wireless communication headsets have durability or longevity issues different from wired sets?**

No. The headset's durability and ease of use has already been tested and proven over the years. Comm cords and connectors are no longer a failure point with wireless headsets, as they are no longer present. (for example, there are no problems with slamming the cords in the door). The battery will need to be replaced every few years with a wireless headset. With the exception of the battery replacement, there are no maintenance differences between the wireless and wired headsets. Firecom's wireless headsets the enhanced the users' ability to have both hands-free operation and secure transmission.

**How will the reconfiguration of the 700-mhz band effect the wireless microphones?**

The reconfiguration of the 700-mhz band will not affect the wireless microphones. Firecom's wireless system is licensed by FCC.

**Is background noise any different with wireless and wired communication?**

No. The wireless headset is voice activated much like the wired headset. It has built-in noise gating to prevent background noise from breaking through. Transmission is digital audio, which is even better than CD quality.

**Will solid objects (i.e. walls, floors, and apparatus) block the wireless signal?**

Solid objects will exhibit some attenuation to the wireless signal depending on the nature of the object (material, thickness, geometry, etc.). Site topography and conditions may also influence the range.

However, the wireless system provides more than sufficient range for the intended use through carefully calculated RF power levels, antenna design, antenna diversity, and the very nature of the chosen protocol and operating frequencies. The wireless system has been tested under a wide variety of site conditions and is proven to provide excellent performance around the fire apparatus under typical Fire/Rescue site conditions.

**Are the units weather resistant (rain, wind, mud, etc.)?**

The wireless headsets are weather resistant within reasonable limits. They are protected against rain (not submersible) and were subjected to environmental testing for humidity, salt fogging, shock and vibration per MILSTD-810F. All electronics inside are conformally coated for added weather protection.

**Are they affected by any other radio spectrum interference?**

No. The wireless system was subjected to RF immunity testing between 30MHz and 18GHz at 50V/m field strength and did not experience any degradation of performance throughout the entire specified spectrum. It also employs the principal of co-existence with similar devices operating in the vicinity.

**What is the wireless system's reliability to maintain connectivity?**

The wireless system is very robust in terms of maintaining connectivity within the operating range boundary. It employs dual antenna spatial diversity on both ends (the fixed and portable parts). It is also capable of automatically restoring connectivity when lost due to exceeding the operating range.

**Is there a warning if connectivity is lost?**

The Firecom headset will sound a non-intrusive warning beep once every 15 seconds when the headset is on the fringes of the operating range and prior to losing the link completely.