

## **Innovation Nation at Risk**

### **Shure Incorporated**

### **September 2011**

With a history of innovation spanning more than 86 years, Shure Incorporated has turned a passion for making great microphones and audio electronics into an obsession. Established as Shure Radio Company in 1925, founder Sidney N. Shure was a 23-year-old entrepreneur with experience building and operating home-made radios. By 1940, Shure was recognized as one of the world's most diversified microphone manufacturers, offering carbon, crystal, condenser, and dynamic microphones. Today, one out of every three microphones sold to audio professionals across the globe is a Shure microphone.

Until his passing in 1995, Mr. Shure remained an inspiring and visionary leader, with a drive for excellence and innovation. Today, Shure remains aligned with the core values he established, even as the complex audio industry grows and changes.

Shure continues to set the worldwide industry standard for superior microphones and audio electronics, and pioneered the first wireless microphone. The Vagabond, released in 1953, was the first "practical wireless microphone system." The system provided a preview of the wireless world to come and sparked further research and development in wireless technology.

It wasn't until 30 years later that wireless microphones became as popular as wired models. The first modern wireless system marketed by Shure was the W-Series Wireless System, launched in 1986.

The production of music and commercial events has changed so drastically over the years that wireless microphones are now indispensable for the show "to go on." Today, wireless microphone systems are critical to virtually every news, sports, business, and entertainment event produced. And, of course, the listening and viewing public—rely on and expect clear, uninterrupted audio.

Shure took a leadership position and was one of the original supporters of finding a solution to the so-called "white spaces" issue—protecting wireless microphone users from interference from white spaces devices. The white spaces are the channels in between

locally-occupied TV channels. These channels are used by wireless microphones, wireless in-ear monitoring systems, wireless production intercom systems, and other professional wireless equipment used by program and event producers, broadcasters, meeting facilities, and houses of worship.

### **The impact of digital television convergence**

A major flashpoint for the wireless microphone industry was when cellular phones and personal data assistants became widespread consumer products. This signaled a boom in demand for wireless spectrum. The scarce amount of available spectrum challenged Shure. As a solution, Shure developed several wireless products, matching the product to the environment and application.

In June 2009, analog TV broadcasting switched to digital (DTV). As a result of the transition from analog to digital, television channels in the U.S. can be spaced closer together in the spectrum—even on adjacent channels. This allowed TV stations to fit into a smaller section of spectrum. After extensive study, the Federal Communications Commission decided to allow other wireless devices (including smartphones, computers, and similar products) to use these unassigned TV channels, referred to as “white spaces.” The prospect of consumer wireless devices sharing the spectrum used by wireless microphones and other professional wireless systems created a great potential for interference.

Shure needed to address this probable interference issue, while not only maintaining but improving sound quality. Shure was deeply concerned about the FCC proposal and worked closely with the Commission and lawmakers in Congress to craft a plan that enabled expanded use of the TV spectrum without disrupting current wireless microphone users. The Company had to ensure that a workable means for preventing interference to wireless microphones was included. In the form of comments to the FCC and correspondence with Congressional representatives, support for Shure’s position came from the broadcast, theater, and the live sound production community, audio equipment retailers and integrators, houses of worship, and end users at various technical levels. Finally, after almost eight years, the final rules, adopted in September 2010 (more information below), include measures that protect both small and large users of wireless microphones.

## **How we are using technological innovation to protect our users, expand our relevance, and provide more functionality**

Audio, video, networking, and telephony technologies are increasingly converging. Shure always focuses on benefits to the end user when determining technical solutions. The Company continues to design products that will cohabitate with other devices. Shure also was a pioneer in audio compression and expansion (companding), which enables wireless products to offer increased dynamic range while transmitting in a narrow radio frequency (RF) channel. Through Shure's continuous research and development, other industries can move forward with promising new products and services that will not interfere with wireless microphones.

Shure is introducing advanced technology to reshape its products and protect customers from interference. These solutions will enable its products to effectively operate with unlicensed devices in the future.

Future innovation in this area includes a Wireless Management Network manufactured by Shure, featuring a fully-integrated comprehensive response to converging regulatory, market, and technological challenges. This "smart" system can automatically detect the potential for interference and change frequencies, undetected by the user, to avoid RF interference.

## **The results of our interactions with the FCC, the rulings that were issued, and what they mean for our industry and our customers**

On September 23, 2010, the FCC ruled to protect wireless microphone users from interference from white spaces devices. The Memorandum Opinion and Order issued by the FCC reserves two TV channels nationwide for wireless microphone use. The reserved channels are off-limits to UHF Band Devices that operate in the white spaces between assigned TV stations, preventing them from interfering with wireless microphone signals on those channels. Large-scale users will achieve extended protection for specific events (like Broadway productions and the Super Bowl) through a geo-location database prescribed by the FCC in 2008.

The reserved channels and Shure's breakthroughs in wireless microphone protection will provide a safe harbor in which musicians, small theaters, houses of worship, sporting events, civic and corporate events, and businesses that rely on quality audio can operate wireless microphone systems without interference from new TV band devices.

The FCC order helps guarantee that the flawless sound music fans expect will continue without interference from new consumer wireless devices, and demonstrates a commitment to supporting America's position as a leader in the creation of news, sports, cultural, and entertainment content at venues of all sizes.

These decisions have provided additional broadband capabilities and created new markets for innovative applications and services to benefit all Americans.

### **The benefits of this technological innovation to our industry and to the nation**

These efforts were ultimately about the hundreds of thousands of individuals, businesses, and non-profit organizations that use wireless microphones every day to inform, inspire, educate, and entertain. The concerts, plays, meetings, classes, and worship services they produce and that we attend are important to our country and contribute significantly to our nation's economy.

As a worldwide leader in wireless audio technology, Shure remains committed to providing our product users with a wireless future that is free from interference and with products they can count on day after day. The audio industry continues to grow and innovate, creating new applications and uses, each with their own set of challenges. This makes it necessary for Shure to stay ahead of the curve.

In addition to consulting with the FCC and lawmakers in the U.S. on a regular basis, Shure is working with organizations such as the European Telecommunications Standards Institute (ETSI) and European Conference of Postal and Telecommunications Administrations (CEPT) that are studying the technical, operational, and regulatory issues that need to be considered to prevent interference to wireless microphones as TV band devices are deployed in other parts of the world.

Shure will continue to help protect the wide variety of environments where wireless microphone use regularly occurs, including stadiums, arenas, hotels, convention centers, music venues, theaters, educational institutions, and houses of worship. Whether individuals are holding a microphone or listening to one, they deserve nothing less than uninterrupted, crystal clear sound.